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Project Cheesebox³

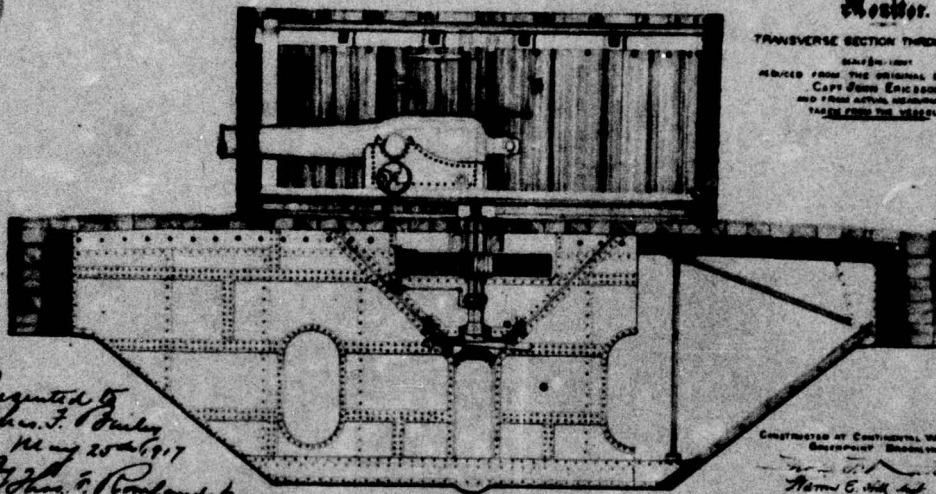
A journey into history

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U.S. Sea Club Steam
Monitor.

TRANSVERSE SECTION THROUGH TURRET

SCALE: 1/4" = 1'-0"
REDUCED FROM THE ORIGINAL DRAWING OF
CAPT JOHN ERICSSON,
AND FROM ACTUAL MEASUREMENTS
TAKEN FROM THE VESSEL.



Presented to
Chas. F. Bailey
May 25th 1917
By John F. Rowland & Co.

CONSTRUCTED BY CONTINENTAL WORKS,
GREENPOINT, BROOKLYN, N.Y.
HARRY C. WILKINS
DATE OF LAYOUT
DATE OF SUBMITTAL WITH REVISIONS



Volume Two

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EDITOR'S NOTE

After the first Monitor, Ericsson and company continually strove to improve the design and with the impetus of orders for six more of larger size, Ericsson's mind would not rest.

To gain more information on the operation of the ship, he corresponded with the engineers on board and though he did not easily accept criticism, he was receptive to it.

In March of 1862, Ericsson sent the specifications to Washington for his "new improved design." By the end of the war, the North had commissioned a total of 33 monitors along the Ericsson design.

COPY

New York, March 19, 1862.

Sir:

I have forwarded to Chief Engineer Stimers a statement of the several improvements which I have introduced in the planning of the new batteries on the Monitor system. I have deemed this the proper course, since you have expressed your determination to confer with Mr. Stimers on the subject. Mr. Stimers will thus have an opportunity of well considering all points before approving before you.

The most important change made, is that of giving lines to the lower vessel resembling an ordinary vessel, yet retaining all the protecting features of the upper body. This lower vessel I have made 3 feet 8 inches wider than in the Monitor, as you desire, in order to give more room. This increased beam is obtained without increasing the length of deck beams more than 1 foot, 8 inches, by taking out the break at upper part of lower vessel as you desire. I need not observe that increase of deck diminishes the capability to resist shells.

The most important improvement consists in placing the pilot house on the top of the turret cylindrical in form, 6 feet diameter. In connection with this modification of the Monitor plan, I may name that the air for supplying boilers and for ventilation, will be drawn down through the pilot house and turret roof, so that the inconvenience experienced on board the Monitor during the passage to Hampton Roads will be obviated.

The diameter of the propeller will be increased from 9 to 12 feet. The fan tail aft will be modified so as to produce greatly diminished drag in the water and yet offer the same complete protection to rudder and propeller as now. The flooring in the forward part of the vessel will be raised up to within 7 feet of the deck, by which together with the increased beam, we present nearly twice as great a deck area as in the Monitor. The turret will be supported by two transverse bulkheads and two longitudinal bulkheads connecting the former. By this modification a base of immense strength will be given to our new ponderous turrets and its big guns. Other changes and improvements will be presented to you as we proceed.

Our newspapers are crazy and by their extraordinary comments and propositions are not only hurting, but murdering everybody and everything connected with the iron clad navy. We all regret that the article in the National Intelligence informing the country who built the Monitor, did not appear 10 days ago.

Your most respectfully,
(Signed) J. ERICSSON.

Commodore J. Smith,
Washington.

Monitor, Hampton Roads

April 23, 1862

My dear Sir

Your letter of the 21st was recd yesterday - I would have answered it immediately but I was on shore when I recd it, busy with work for the Monitor.

You ask me to state what defects I have discovered in the steam machinery of the Monitor - They are in my opinion as follows:

The steam pipes to the blower engines and donkey pumps should be connected to the boilers by independent stop valves, instead of the present arrangement outside the stop valves in the main steam pipe -

The feed pipes from the donkey engines should be connected to the boilers by independent pipes instead of the present arrangement of delivering into the main feed pipe -

The suction pipe for the donkey pumps should be large enough to supply both pumps when working at full speed and be attached to a part of the vessel some distance from either the injection or delivery pipe -

The working parts of the blowing engines such as the bearing surfaces of the crosshead guides, crosshead journal, crank pin, eccentric strap valve stem and main shaft journal should be made very heavy so as not to require frequent keying up to, these engines perform a very important function and no pains

should be spared so as to make them impossible to give out.

A large steam blast should be put in the uptake.

Such things as the stem and screw for the throttle valve should be made very much heavier. No bolts less than 1 1/8" should be used about any part of the steam machinery -

Although the arrangement of reversing gear has caused no trouble thus far with the exception of the yoke operated by the wheel which moves the sectors, breaking, I would prefer to have the valves operated by a link motion and what in my opinion is better still, to have the engines proportioned to cut off at 2/3 without a separate expansion valve, this will greatly simplify matters -

I would have water valves kept closed by means of weights (not springs) fitted to each end of each cylinder -

Each vessel should be provided with a centrifugal pump capable of throwing 2000 gals of water per minute -


The blowing power should be very great fifty per cent more than will be ordinarily required.

The fresh water condenser should have a connection with one of the donkey pumps, so that condensing water may be forced in when the engine is at rest -

The bilge injection pipe should be as large as the main injection pipe -

All joints about the air pump and condenser should be faced joints made with putty not india rubber -

The surface blows should be arranged so that they may be opened from the fireroom. Such details as proper means for raising the safety valves should be carefully attended to.

All radical changes in the construction of the vessel which have occurred to me, I have communicated to Mr. Stimers, doubtless he has mentioned them before, hence it will be superfluous for me to write anything about them. One I have omitted, it is this, all around the edge of the vessel where the deck plates join the side armor there should be a heavy angle iron fitted (with a sharp outer corner) to keep the deck plates when struck at this point from rolling up as they did in the Monitor, exposing the wood — Thus 

The vacuum engine you speak of, should be large enough to condense all the steam generated by the boilers with heavy fires, when the engines are at rest — We are in daily expectation of a second visit from the Merrimac, it will probably be her last appearance.

I have succeeded in getting both guns out together at a depression of $1\frac{1}{2}^{\circ}$, this is a point of vital importance in fighting the Merrimac —

This is Jeffers opinion and he will fight her in that style — I think if both are fired nearly together it will carry in that portion of her side included between the axes of the two shot, or fire one gun first with a shot, the other immediately after with a shell which will give the hole made by the shot —

Luck is a great thing - the Monitor made Worden - as there are no sails and ropes on the Monitor, the spare time this deficiency gives the first Lieut. causes one very great annoyance.

The Monitor is a machine the creation of an engineer.

The engineer of the Princeton & Monitor are the only direct acting screw engines the U. S. Navy have ever possessed.

Very respectfully yours,

(Signed) Isaac Newton

Capt. J. Ericsson

COPY

New York, March 22, 1862.

Sir:

I have the honor to present plan of the new iron clad vessel made according to your instructions, 200 feet long, 37 feet, 8 inches width of lower vessel (3 feet, 8 inches more than Monitor), length of lower vessel 159 feet, 7 feet deep below upper vessel. Upper vessel 5 feet deep as before.

I have made the lines as fine as practicable. The displacement will be full 600,000 pounds more than that of the Monitor. Area of berth deck nearly twice that of the vessel named.

The precise form of the under side of upper vessel, over the propeller will be seen more clearly by a model that will be forwarded next Monday.

We are now laying down the vessel according to the enclosed plan and we have ordered the whole of the iron. Keel plate is $3/4$ inches and bottom plates next thereto $5/8$ inches thick. The former, best American "flange iron", and all the plate best American plate. I feel most anxious to learn if you approve of my lines as the internal work and machinery will not admit of much change.

I am, Sir

Respectfully
Your obedient servant,
(Signed) J. ERICSSON

Commodore J. Smith,
Bureau of Yards and Docks,
Washington.

COPY

New York, March 30, 1862.

Sir:

I have just received a communication from Mr. J. A. Griswold, from which I infer that you are under an impression that my plans of the intended 200 foot gun boats, resemble in point of strength, the gun boat Monitor. I hasten to correct this impression. It is true I propose to make the keel plate and bottom to a width of 17 feet of $3/4$ and $5/8$ inch plate and all the rest of the vessel of $1/2$ inch (plump). But permit me respectfully to state, that a vessel built of best American iron $1/2$ inch thick would pass the ordeal of thumping on a sand beach for 24 hours, whilst a vessel composed of English boat iron $3/4$ inches thick, would go to pieces. The framing of the new gun boats I have planned, is however of unusual strength. The distance between the angle ribs will only be 14 inches. The whole forward part of the vessel will have transverse bulkheads 4 feet deep at 6 feet spaces. Upon these the berth deck will rest. The aft part will have 16 inch deep transverse floor plates at every 3 feet. On the sides of the boilers will be strong ribbed bulkheads connecting the bilge with the deck. Some 12 feet from the stern will be a watertight strong bulkhead extending over the projection to the vessel's side, thus giving great support to the bulwark. Near the bow a similar strong watertight bulkhead will be introduced. Near the

center of the vessel will be two bulkheads 15 feet apart ribbed and braced in the most substantial manner. These bulkheads again will be connected by two fore and aft bulkheads, also strongly ribbed and braced. The corner brackets, connecting each deck beam to the vessel's side, will be of unusual size and strength. The vessel's side near the bulwarks, will be fully twice as strong as in the Monitor. Three rows of stanchions 3 inches diameter will support the deck. The objectionable system of dividing the vessel in two by inserting a forged keel, which, on running upon rocks, cuts the rivets, and open the bottom, we avoid by the flexible keel plate riveted under the bottom, capable of resisting, any amount of pressure from below without starting the rivets. Altogether I will furnish you an iron hull, deck and bulwark, which for strength and stability has never been equaled. Any thicker plate than 1/2 inch, best American iron, I respectfully remonstrate against, excepting for the flat part of the vessel's bottom. Practical men know that, all things considered, half inch plates riveted together with 3/4 inch rivets produces the strongest work.

I sincerely trust you will weigh this matter well before ordering heavier iron. Please bear in mind that the majority of our rolling mills have no means of rolling good plates above 1/2 inch, nor do the workmen possess any experience

in rolling plates of greater thickness.

These considerations I respectfully submit, are so important that they can not be overlooked without injurious consequences.

I am, Sir

Respectfully,
Your obedient servant,
(Signed) J. ERICSSON

Commodore J. Smith,
Bureau of Yards and Docks,
Washington.

COPY

New York, April 7th, 1862.
4 o'clock P.M.

Sir:

I have just received your telegram, in reply to which I have respectfully to state that I did not receive from you my letter of 30th March, nor have I any copy of the same. It was written in great haste to save the mail, and as it contained nothing beyond definite matter exhibited on my plans, I deemed any copy of no importance.

I have worked night and day since my return, to furnish the rolling mills and shipbuilders with plans and specifications of plate work, and have, therefore, been unable to prepare the document called for in the contract for building the 6 vessels. Tomorrow I shall be able to attend to this matter.

You will much oblige me by furnishing me with a copy of the plans and specifications presented by Mr. Stimers, to enable me to draw the necessary comparison between the vessel prepared by him and those which we are now building for your Department.

I am, Sir, respectfully,

Your obedient servant,
(Signed) J. ERICSSON.

Com. J. Smith,
Bureau of Yards & Docks,
Washington.

COPY

New York, April , 1862

Sir:

I have the honor to enclose copy of the working plans from which the six steam batteries are now being built. You will find on inspection that these vessels will possess extraordinary strength, their bottoms being of greater stiffness than any of similar tonnage yet built. I would respectfully call your attention to the fact that the pernicious system of cutting off the transverse floor plate by a longitudinal keelson has been obviated. The central part of the vessel is secured against pressure or strain in all directions by the three vertical bulkheads at frames 51, 61 and 69, the two former being connected by longitudinal bulkheads placed 15 feet apart. The square chamber thus formed between frames 51 and 61, besides forming a case for the turret to rest upon capable of sustaining the weight of many millions of pounds, will, at all times, afford a ready access to the turret as there will be no deck planking over said chamber. Powerful blowers will be placed in the chamber, exhausting the air from it, a supply being obtained from above through the turret. Through the nozzles of the blowers inserted into openings of the bulkheads, the air will be forced into the vessel in any direction. The great strength secured by the central plate keelson between frames 3 and 51, resting as it does upon the 16 inches deep transverse floor plates and connecting the 4 feet deep floor plates will be readily seen. I would

particularly call your attention to the introduction of a coal bunker between the bulkheads 69 and 61, standing across the entire vessel containing 100 tons of coal. The longitudinal bulkhead extending from the aft engine bulkhead on frame 93 to the bulkhead at 69 will greatly strengthen the aft part of the vessel. Great strength will also be obtained by the water-tight bulkhead at frame 100, as also by the very deep transverse engine bulkheads at frames 87 and 93. The water-tight bulkhead at frame 9, as also the upper bulkhead at frame 1, will in like manner add much strength. But the most important feature of this battery, which distinguishes it from all other vessels hitherto constructed, is the broad belt which passes around the entire hull. This belt or flange is 1/2" thick, 3' 8" wide at the midship section and tapers to 2' 8" towards the extremities of the battery. It is firmly riveted to the hull by a 4" angle iron and supported at intervals of 3' by brackets extending up to the top of the vessel. A 4" angle iron is, moreover, riveted to the top of the plate, continuing from stem to stern. The great extent of berth deck will recommend itself to your favorable notice, as also the great bulk of stowage room under it. The spaces 11' x 15' on each side of the turret chamber will further add to the available room under the new arrangement.

I am so overwhelmed with work connected with my gigantic undertaking of building a fleet of six armor and turret vessels

in four months, that I must beg your indulgence in regard to the specifications. It will materially assist me if you will send a copy of the Monitor specifications. Mr. Griswold promised me last week that he would convey my request to you in relation to the specifications. A copy of Mr. Stimers' plan of battery, I am also anxious to obtain, that I may demonstrate that our cheaper vessel is the best, to say nothing of the saving of time.

I return the contract duly executed and will forward the specifications as soon as practicable.

I am, Sir, respectfully,
Your obedient servant,
(Signed) J. ERICSSON.

Com. J. Smith,
Bureau of Yards and Docks, (over)
Washington.

I have respectfully to add that the deck beams of the six batteries will be made of oak as in the monitor, but 12 by 12 inches square instead of 10 by 10 as in that vessel. The spaces between the deck beams will thus be reduced to 24 inches. Several of the deck beams in the new vessels will, moreover, be 12 x 18 inches and three rows of stanchions from 2-3/4 to 3 inches in diameter will support the deck. The Monitor's deck lacks a central row of stanchions. The addition is rendered the more necessary as the new vessels have greater beam. The increased area of deck beam, in the ratio of 144 : 100

-4-

as compared with the Monitor, and the increased stability of the deck plank by reducing the space between the beams to 24 inches, I deem necessary to resist shell.

J. E.

COPY

Sir:

I have received the plans, returned for amendment, but cannot detect any faults excepting the clerical error of "1/2" written for "1/4" - a mistake, which I respectfully submit, could not possibly lead to trouble.

The transverse section of the vessel was taken at such a place as to represent the mean thickness of bulwark. Please observe that the vessel tapers gradually from the mid-ship section and that both the extreme beam and thickness of bulkhead rapidly diminishes towards both ends of the vessel. This accounts for the width of only 44 feet, which you notice. The dimensions marked on the plan near the mid-ship section show the width over the plate on which the bulwark rests, but does not indicate the extreme beam from inside to outside of armor.

Your observation that I am "going ahead too rapidly" because the "contract is not consummated" could not be intended as it reads. I am working in good faith under a positive understanding and in accordance with certain definite stipulations, and, moreover, using exertions which few individuals could make without breaking down, all in order to produce the six batteries within the time set by the Department. You emphatically told me, when last I had the honor to meet you, that you would hold me to time and now you say that I am going ahead too rapidly, when the fact is, Sir,

that I am not progressing fast enough to fulfill my engagement with you. I have supposed that the country needs the vessels which you have ordered me to construct, and I have thrown my whole soul and energy into the matter, scarcely allowing myself I have not been able to supply plans and instructions fast enough to keep the numerous establishments we employ in full operation. With what emotions I now receive your reproof because I have not produced certain specifications - mere formalities - you can well imagine. I will send on the specifications as soon as practicable and, in the meantime, cannot allow myself to entertain any apprehensions that the Department will break its positive verbal engagement.

I notice the proposed change in the times of payment.

I am, Sir, respectfully,

Your obedient servant,

(Signed) J. ERICSSON.

Com. J. Smith,
Bureau of Yards and Docks,
Washington.

COPY

New York, April 18, 1862.

Sir:

I have no hesitation in recommending the wrought iron carriages for your Philadelphia iron-clad shop. I will send you drawing of those of the Monitor tomorrow. You will no doubt at once discard the clumsy wooden carriages and substitute the material which all the world now prefer.

At last, I have so far got ahead with the working plans of the new Monitor that I have been able to take up the specifications. Nothing but a copy is now wanted and that will be completed before noon tomorrow. Mr. Barnes will present all the documents for your ratification next Monday morning.

Several keel plates are laid, hundreds of frames are bent, two main cylinders in hand and scores of smaller castings made and being turned for the Impregnable.

"John Bull" may do his best, but nothing can save him---- in less than four months we can put shot through the WARRIOR'S 4-1/2" plates as readily as "John" can put his favorite 68 pounders through a deal-board.

Your most respectfully,
(Signed) J. ERICSSON.

Com. J. Smith,
Washington.

COPY

New York, April 19, 1862

Sir:

I enclose drawing of the wrought iron carriages of the Monitor. Should you desire to build carriages on this plan, I shall be very happy to send you a detailed working drawing showing friction gear complete.

Your most respectfully,
(Signed) J. ERICSSON.

Com. J. Smith,
Washington.

COPY

New York, April 23, 1862

Sir:

I have duly received the drawings and specifications of an iron-clad gunboat on the Monitor Plan, prepared by Chief Engineer Stimers.

I have not yet had time to examine the plans minutely, yet I have seen enough to enable me to say that the form and proportions of the vessel exhibit great weakness. A hull so built would be utterly inadequate to sustain the weight of turret and armament, whether afloat or aground.

I am, Sir, respectfully,
Your obedient servant,
(Signed) J. ERICSSON.

Com. J. Smith,
Bureau of Yards and Docks,
Washington.

COPY

New York, April 25, 1862

Dear Sir:

I will at once have copies made of wrought iron carriages for your XI-inch guns. The depression of the trunnion, or the carriage, involves too many mechanical difficulties for your present purpose. I strongly advise your adhering to the old system.

I cannot see why you are so desirous of high elevation. Iron-clad ships and close quarters go together.

In relation to Mr. Stimers plans, I believe, on full reflection, he now desires to withdraw the same. I have not deemed it necessary to enter on any arguments in favor of my plan. Mr. Stimers is too much of an engineer not to see all this.

Most respectfully,
(Signed) J. ERICSSON.

Com. J. Smith,
Washington.

COPY

New York, May 3, 1862

Sir:

I enclose working drawing of a wrought-iron carriage for XI-inch gun, with friction gear complete. The carriage is represented to be placed on a wrought-iron slide. I take it for granted you intend to employ wooden slides, of the usual form, all but the friction timbers. You will observe I have not placed any guide rollers on the inside, as represented on my former plan. If you decide on employing wooden slides, these rollers will not be quite appropriate. The friction timbers under the carriage, from which you will attach this slide, will afford a perfect guide.

I am, Sir, respectfully,

Your obedient servant,
(Signed) J. ERICSSON.

Com. J. Smith,
Bureau of Yards and Docks,
Washington.

- 29 April--Exchanged solid shot for hollow shot with Steamer Porthenia. Received 30 tons of coal.
- 30 April--"received on board a booby hatch for main companion way."
- 1 May--"delivered 10 buckets of coal to tender. workmen engaged on pilothouse."
- 2 May--Friday. weather pleasant.
- 3 May--"Heavy firing in the direction of Yorktown."
- 4 May--Heavy firing in direction of Yorktown between 4 and 5. Signal lights on Craney Island.
- 5 May--heavy air, squalls. Workmen on pilothouse, lights seen on Craney Island.
- 6 May--"received on board a quantity of machinery for steam plant."
- 7 May--President Lincoln came on board at 1 p.m. Merrimac sighted at 1:30. Merrimac retired towards Norfolk at 4:30.
- 8 May--sighted a tug going from Elizabeth Riv. to Newport News. At 6 a.m. Galena (ironclad) and two gunboats went up James Riv. At noon got under weigh and steamed toward Sewell's Pt. with U.S.S. Seminola.
 "From Median to 4 P.M.
 "Clear and pleasant. standing in for the battery at Sewell's Point in company with Susquehanna, Seminole, Dacotah, and San Jacinto. At 1.10 p.m. Susquehanna opened fire. At 1.20 p.m. being about 1000 yds. from fort opened fire without eliciting any reply. Continual fire slow and effectively passed up above and around sunken obstructions. being fired at several times. the barracks in the fort were set on fire three times. on the last occassion some buildings burnt. Counted seven guns on the work and saw but a very small number of men. The enemy being thoroughly sheltered in bomb-proofs, firing at long intervals when our fire slackened at 2.30 P.M. ran down to the Susquehanna and reported shortly after the Merrimac made her appearance standing down. In accordance with the general order dropped down. The Merrimac came down to Sewell's point then retired. . ." returned to moorings.

EDITOR'S NOTE

The original Monitor, after her first engagement with the CSS Virginia remained in the Hampton Roads area for the remainder of the spring and summer. It was here that her crew was introduced to the drudgery of blockade duty.

The Monitor, now under command of Lt. William Jeffries, had orders not to engage the Virginia unless absolutely required to protect the wooden warships. The North had at this time only one ship capable of dueling the Virginia and any unnecessary risks were to be avoided.

The log records the tremendous heat below the iron deck as the Monitor lay at anchor. Her ventilating system was found inadequate and her machinery by the end of August required overhaul. As much of the ship's activity as possible was carried on above deck.

The log summarizes the type of life the jack tars of the Monitor led. The heat, boredom, sudden excitement, and news of the front.

On 2 June they "anchored in consequence of a strangeness of the engine" and an engineer's explanation of the difficulty is inserted. The log continues with flags of truce, exchange of prisoners and excursions up the river. Of particular note is the entry of 2 September pointing out that even the discipline on board the Monitor was iron-clad.

At 6.30 the wardroom steward Lawrence Murray returned, being drunk & disorderly was placed forward of the pilot house in durable irons. On leaving him he immediately threw himself over the side and never afterwards appeared at the surface. Search was made but in vain. . . . Dragged for the body of Lawrence Murray but did not succeed in finding it.

Several attempts were made to attack Southern batteries in company with the Galena, the ironclad Bushnell had contracted to build, but proved unsuccessful because the Monitor could not elevate her guns and the Galena was found easily penetrated by enemy shell. After a disappointing performance, but a welcome break in routine, the Monitor returned to Hampton Roads until the fall when she finally received orders to Washington for the much needed repairs. Her bottom it was found was so badly fouled that she could make barely two or three knots.

- 9 May--"President Lincoln came on board with Secretary Stanton." Took on 16 tons coal. Went on reconnaissance run back to Sewell's Pt. "Fired two 11 inch burning shells into the battery which were not replied to by the enemy. The Merrimac lay in the channel two miles above Sewell's Point." Moored at 4 p.m.
- 10 May--Received some repair materials. Fire seen in direction of Norfolk from 8 to 12 p.m.
- 11 May--A change in wind was noted (both direction & force). Fire in Norfolk brightened to illuminate the entire horizon. Fire towards Sewell's Pt. with occasional explosions. Got under weigh on signal from flagship about 6:00 a.m. Off Craney Island saw pieces of a wreck floating by. Proceeded towards Norfolk. Passed over a chain in the channel without any apparent damage. Tied up to a buoy. Anchored inside Hampton Bay in 2½ fm., in process "touched lightly on the spit & was assisted off by the steam tug Young America." Received ammunition and 22 tons coal.
- 12 May--Proceeded to Day's Point Battery; was fired upon, sustaining an injury. Proceeded to Jamestown and joined Galena, Port Royal and Arantock there.
- 13 May--Proceeded farther up James River. "9 A.M. troop boats Northampton & Curtis Rock passed by with exchanged prisoners." Planted buoys to mark crossing of a bar, one boat went aground. Anchored at City Point. White flags flying. Cotton and tobacco warehouses had been set afire by the enemy. In evening came to anchor in Devil's Reach (?).
- 14 May--Naugatuck fired at from shore by small arms. Proceeded farther up river.
- 15 May--Went farther up river. Engaged in a battle against a shore battery. Struck by a 10" solid shell which made a two inch dent in the Monitor. Proceeded down river. Was fired at from the bank. Anchored above City Pt.
- 16 May--Several men sick due to bad water and air in ship. Captured a ship loaded with contraband. (best interpretation)
- 17 May--Changed anchorage to command traffic on the river. Blockading against ships going up river. Two boats attempted to run blockade, were ordered to Union flag-ship.

- 18 May--Blockading James River. Night watch was issued loaded guns.
- 19 May--Fired a charge of cannister at snipers on shore, who apparently captured a boat crew from another Union gunboat. The townspeople evacuated the city, crossing the river in skiffs.
- 20 May--Flag of truce flown in town. Monitor ordered to cover landing party. Men seen stalking under cover along the shore. Galena fired several times toward the point.
- 21 May--"Heard firing in the direction of Petersburg."
- 22 May--Received 30 tons of coal. Three men transferred to the hospital.
- 23 May--(Friday) Other Union ships working up and down the river, but Monitor remains in the same general location.
- 24 May--Squally weather.
- 25 May--Personnel inspection held at 10 a.m. "7.35. Massachusetts arrived with flag of truce."
- 26 May--"5.A.M. sent a boat ashore after two rebel deserters and delivered them to the flagship."
- 27 May--"7.a.m. saw a flag of truce on shore. sent the boat. found to be darkies. returned on board. . . . Flag of truce returned from Petersburg."
- 28 May--Rocket seen in the direction of Richmond.
- 29 May--Several gunboats returned to the area. Rocket seen towards Richmond.
- 30 May--Severe thunderstorms.
- 31 May--Movement of other gunboats.
- 1 June--Firing heard in the direction of Richmond. Picked up a deserter and sent him to the flagship.
- 2 June--Proceeded up the river; "anchored in consequence of a strangeness of the engine." "found a flag of truce with 70 (prisoners) on board to exchange."

U. S. Steamer "Monitor"
James River June 2nd 1862

Sir:

Shortly after we got underweigh, this morning, the Air-pump piston rod, Air-pump connecting rod, the plunges of both feed and bilge pumps were bent. This was caused by the hollow socket cast on the feed pump suction valve, and the round stem cast on the delivery valve which works in this socket, both breaking off, and entering the chamber of the force pump; the plunges on its return stroke striking these pieces and causing the bending of the parts above mentioned; the feed and bilge pumps being attached, one to each end of the air pump cross-head. The Engines were at the time working slow. The air pump piston rod is made of brass and cannot, I think, be made entirely straight without breaking. I have however made it as straight as I could with safety. The air-pump connecting rod was bent about 1 3/4 inches; it has been heated and an attempt made to straighten it, but a crack showed itself, after a few blows with the sledge. The body of the feed-pump plunger is bent a little, but it cannot be thoroughly, straightened without the use of a lathe, and the end which came in contact with the pieces of broken valve was so much burred, that it could not be withdrawn from chamber. The bilge pump plunger is but little bent. The engines can be made to operate as far as the valves of the force pump are

concerned, by making use of the bilge pump suction valve and fitting an iron stem to the broken delivery-valve. This has been done. The engines can be made to work, but some of the parts mentioned are liable to give-way at any moment. The engines can also work high pressure, but it is not desirable, to run them so, longer than can be helped. A new air pump connecting rod and a set of valves for the feed pump should be made immediately, and I recommend that a new air pump piston rod, and a force pump plunger, be also ordered.

The machinery, was built, by "C. H. Delamater," foot of 13th St. New York.

Accompanying this you will find sketch illustrating the accident.

Very Respectfully Yours

Isaac Newton

Senior Engineer

Lieut Comdg
W. N. Jeffers USct
Comdg Monitor

- 3 June--Sent a boat on shore with flag of truce. Ship with prisoners aboard arrived.
- 4 June--(Wednesday) Remained at anchor while other ships patrol river. "Sent a boat on shore to convey a flag of truce."
- 5 June--"Heard firing towards Richmond."
- 6 June--"large quantities of drift coming down the river. . . . Island Belle came down the river, a flag of truce from pilothouse. sent a boat to communicate." Island Belle went up river, then returned. "came alongside & took on board the officers on parade also French consul & lady and conveyed them to the Stepping Stones which immediately went down the river."
- 7 June--(May 7/62 in log) received stores.
- 8 June--Island Belle, Delaware and Gunboat Arantock traveling up and down river.
- 9 June--"Stepping Stones arrived from Fortress Monroe & were sent up the river to Senior Officer. Twenty combatants came off & were ordered back again."
"Communicated with flag of truce from Petersburg."
Steamer Arantock went down the river.
- 10 June--"T. B. Vail 2 P.M. leave of enlistment expired."
- 11 June--"Wachusett, Delaware & Stepping Stones came down the river. . . . Delaware fired several times in direction of Bermuda Hundreds (?)." Received 40 tons coal.
- 12 June--"Commences & till 4 A.M. Light airs from the S.W. & fine weather. a total eclipse of the moon lasting an hour occurred during the watch."
"At 1 P.M. thermometer stood 142° inside the galley, the doors being open and the blowers of the engine being in suction. 3.20 the Arantock came up the river. Delaware came down the river having a large scow in tow." Received some supplies.
- 13 June--(Friday) A ship arrived from Hampton Roads.
"A flag of truce was sent by the enemy and communicated with by the flagship. . . . Metamora came up with flag of truce and anchored."
"The vessel (Monitor) was visited by his officers of the Danish Navy Capt. Bath & Lieut. Schorburger."

14 June--Got under weigh and proceeded up river.

"When we could only make $2\frac{1}{2}$ knots temperature in the Galley with both blowers running stood 132° & 125° soon as blowers stopped it ran to 150° . U. S. St. Madacka sent on board of us two Danish Naval officers."

Galley temperature	150°
Berthing deck	125°
Water closet	131°
Air deck (shade)	90°
Air deck (sun)	125°

Anchored.

15 June--11 a.m. 85° in shade, 116° in sun 90° in turret 124 in engine room 140° in galley 90° Berthing deck 105° water closet.

10 p.m. 107° in galley 77° and 79° in berthing deck on deck 62°

16 June--Saw a band of armed men on the bank; Mahaska fired at them. Other ships were active in the area.

17 June--"Heavy firing in direction of City Pt. lasting an hour." Pickets seen on left bank of river.

18 June--Port Royal arrived. Mahaska went down river

19 June--At 6 a.m. Jacob Bell went down the river.

20 June--Jacob Bell and Port Royal went down the river.

21 June--Galena came up and went back down the river.

22 June--"Engine working to condense fresh water."

23 June--"at 1.30 A.M. discovered the deck on fire around the stove pipe in the galley. extinguished it and examined the place every half hour during the watch. . . . The galley not in use. cooking is done on the deck."
"Mahaska fired several shells towards Bermuda Hundred"
Went down the river with Galena and Port Royal.

24 June--1 p.m. ". . . Port Royal arrived from Jamestown Island." "saw a rocket in direction of Richmond. anchored by Galena."

25 June--near City Pt. "Str's. Satellite & Tug Boat Fred Kopp with submarine boat in tow arrived from below."

- 26 June--got under weigh 7 p.m. with Galena, Arantock, Marataura, Mahaska, Jacob Bell, Southfield, Satellite, Island Belle, Stepping Stones, Port Royal and Delaware. Proceeded up towards Appamatox River. "9 p.m. after much difficulty succeeded in crossing the bar & proceeded up the river. . ." Advanced vessels met with sharpshooters and obstructions and had come to a standstill. Marataura went aground and detained fleet.
- 27 June--still waiting for Marataura, aground.
- 28 June--Marataura got under weigh at 5 a.m. and anchored near Monitor. Fired several shots towards Petersburg. Entered James River at 3:45 p.m. and proceeded up river. 6 p.m. Anchored in Devil's Reach. "Galena sent up 3 rockets. saw the light of two fires, one in the S.W. & one in the N.E. direction.
- 29 June--Got under weigh at 8:30 and proceeded down river. Anchored at 11 a.m. at Turkey Beard Bend. "5.45 Saw a jet of smoke in N.E. direction supposed to be caused by exploding of powder.
- 30 June--"Heard musketry & artillery in N.W." Returned to below City Pt. "Army transports arriving. Stepping Stones went down with wounded."
- 1 July--Received 20 tons coal.
- 2 July--Got under weigh, went up the river, anchored off Gaxall (?). Soldiers seen. Took on board some soldiers belonging to various units. Some of these put back ashore.
- 3 July--Got under weigh and went down river. Anchored at Herring Creek. "Transports continually moving up & down river." Other vessels fired several shots at a Rebel battery.
- 4 July--Proceeded up river and anchored. Got under weigh and went up river with Marataura. Marataura fired several shells. After rounding Turkey Island "discovered the Rebel Steamer Teaser on shore & abandoned having been struck by a shell from the Marataura." Marataura took Teaser into tow, went down river. Monitor followed Marataura fired several shells towards City Pt.

- 5 July--"Port Royal moved up abreast of Jordan's Pt."
Shells fired by another ship.
- 6 July--4-7 a.m. Aided Stepping Stones by Windmill Pt.
Marataura went down river and returned with pennant
of Gen. Goldborough. Received 20 fused (5 and 10
sec.) shells.
- 7 July--Received 20 tons coal
- 8 July--Man put on report for insolence to an officer. 12
p.m. Went up river. 3:00 Turned and headed back "Hove
to Kelligan (best interpretation) place." 8:20 Anchored
off Berkeley
- 9 July--"at 7.45 the President & Flag officer came on board."
"Flag Ship Dacotah went down the river."
- 10 July--Squally weather. Other ships moving up and down
the river.
- 11 July--"Rebel Tug with flag of truce lying above. Str.
Sesir with flag of truce passed up the river." Sloop
Wachusett arrived with Commodore Penmory.
- 12 July--"A Rebel tug came down as far as outer Guard with
flag of truce and communicated with flag officer."
- 13 July--"Stepping Stones & Vanderbilt with Flag of truce
went up the river."
- 14 July--Other boats moving. Tug with supplies came along-
side. Paymaster returned on board.
- 15 July--Heavy squalls. Other boats moving.
- 16 July--"underweigh and proceeded up the weather (sic)"
Anchored off Jordan's Pt. "Mr. Gagen Paymaster left
the vessel his resignation having been accepted by
the Sec'y of the Navy."
"Str. Powell came alongside with orders."
- 17 July--"at 11 Dragon came up with fresh beer for the crew."
"Mr. Hains Egr. left the vessel on leave for one week."

18 July--took on supplies including:

tin lanterns	1 bbl beans
Panchos	1 keg pickles
1 box Potash	1 " dried apples
1 box waste (sp.?)	4 boxes P'd beef
4 bbls oatmeal	1 " coffee
1 keg butter	1 Bbl rice
1 bbl beef	9 " bleach
1 " pork	5 boxes soap
5 " flour	cooking stove and utensils.

19 July--Man discharged at end of his enlistment. Received 2 cords wood in Master's Dept.

20 July--No movement reported.

21 July--Light showers. Delaware went down river.

22 July--Received an anchor and 45 fathom chain. Received 4 Bbl. lard oil for Engineering Dept.
Steamer came alongside with fresh meat.

23 July--Received 30 tons coal.

24 July--Cloudy.

25 July--Received mail. A fireman returned from hospital.

26 July--Squally and lightning. Mahaska went down river.

27 July--"drissling" rain.

28 July--Received 18 oil cans for Engineering Dept.

29 July--"Str. Satellite went up the river with fleet surgeon on board."

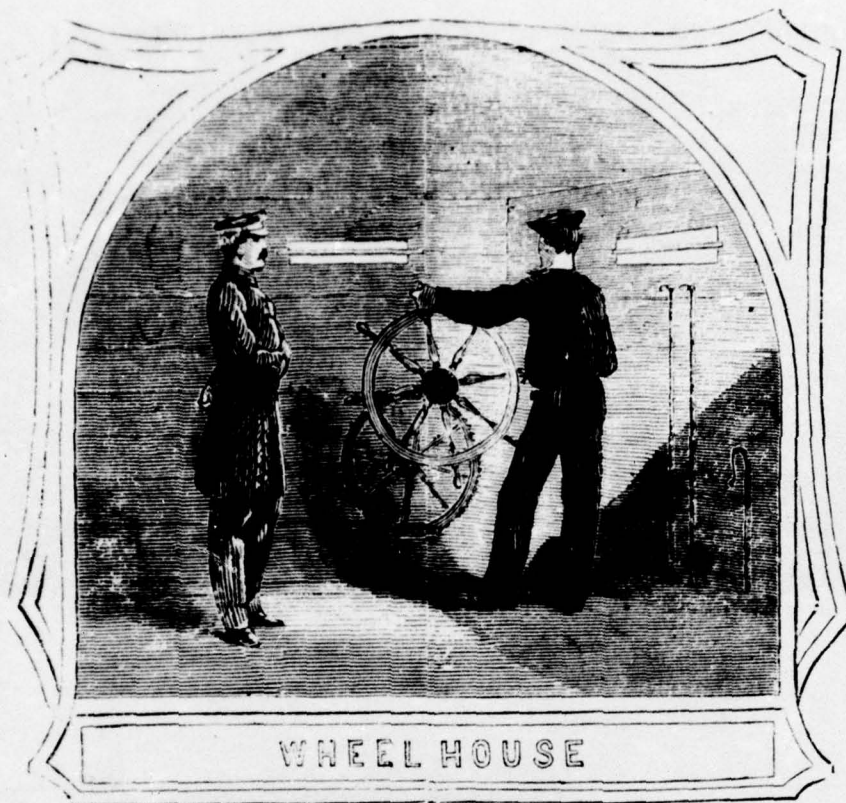
30 July--"at 9 (a.m.) discovered smoke rising in direction of Carl's Neck. packed (best interpretation) steam and made all in preparation for action. At 10 the fleet below moored up above Harrison's Bar and formed in line."
"Delaware went up the river to reconnoiter."
Four people from other ships came on board.

31 July--Two seamen reported aboard.

- 1 August--"At 12.45 the Rebels opened fire upon our camp from the opposite shore with light artillery." Two men who had been on board for temporary duty returned to their ships. "Several strs. with troops landed on the opposite shore & set several houses afire."
- 2 August--"Gunboat Cassierene went down the river."
- 3 August--"The Rebels opened fire on Southfield from City Pt. which she returned. . . . Galena got under weigh and proceeded up to City Pt. & fired several shots at the enemy." Wachusett came up the river.
- 4 August--Several ships came up river and anchored off City Pt. Six shiploads of released war prisoners passed.
- 5 August--"5.30 (a.m.) heard rapid firing in direction of Malvirn Hills." Received some prisoners.
- 6 August--"Gennessee went down the river." Gennessee and Cenicum came up the river.
- 7 August--Several steamers came down the river. "Rcvd. fresh provisions."
- 8 August--"pleasant weather."
- 9 August--Received 25 tons coal.
- 10 August--Squally. Steamer Satellite returned down the river.
- 11 August--"From 4 to 8 at day light a salute was fired from Harrison's Landing. Also 18 guns every half hour in memory of Ex President Van Buren."
- 12 August--"11.45 the Tioga & Currituck commenced firing toward the right bank of the river. . . . Firing still going on at 1. the Str. Yonkers came up the river and in obedience to signal from Flagship proceeded to the Tioga and returned. firing ceased." Weather became squally.
- 13 August--Gennessee went down the river.
- 14 August--The Corn Barring went up the river.
- 15 August--Galena went up the river.
- 16 August--"The last of the fleet of Transports left Harrison's Landing. . . ."

- 17 August--"Inspected crew at quarters."
Four ships came down the river.
- 18 August--"Commander T. H. Stevens came on board, Lieut. Cm'd'r. W. M. Jeffers having been detached disrated the petty officers and turned the command over to Capt. Stevens who continued their respective rates with exception of David Cuddeback, Cap'n. Steward." Shelling of right bank continued, Genessee went aground. Three assistant engineers reported to the vessel
- 19 August--Shelling the right bank of the river.
- 20 August--"the Port Royal, Sonoma & Satellite went down the river." First Asst. Engineer was detached and left the ship.
- 21 August--Currituck and Satellite went down the river. Received fuses. "the Delaware arrived, bearing the Broad Pennant of Command."
- 22 August--Went down river and returned to the same moorings.
- 23 August--Received 30 tons coal.
- 24 August--Satellite and Jacob Bell moving on river.
- 25 August--"Str. Ella arrived with flag officer on board and went up the river under flag of truce."
- 26 August--Calm weather
- 27 August--Got underweigh with fleet. Proceed up to City Pt. and anchored.
- 28 August--Went down the river with fleet; at 8:10 anchored abreast of Westover. 8:30 went up abreast of Jordan's Pt. and returned. Southfield and Alert shelling City Pt. "Time in turning around to port 5'20". to starboard 5'10".
- 29 August--10 a.m. Went down river with fleet 6 p.m. of Jamestown Island. At 9 anchored off Hardin's Bluff in 3 fm. water, veered 7 fm. chain.
- 30 August--"The light keeper of Deep Water Shoal light. at 6 stopped at Point of Shoal light and took off keeper and apparatus. . . . At 9.20 came to anchor off Newport News in five fathoms water." (punctuation correct)

- 31 August--Discharged light keepers and apparatus.
- 1 September--Squally. "At 9.30 commenced dragging anchor. got up steam & returned to our berth."
- 2 September--"At 6.30 the wardroom steward Lawrence Murray returned, being drunk & disorderly was placed forward of the pilot house in durable irons. On leaving him he immediately threw himself over the side and never afterwards appeared at the surface. Search was made but in vain. . . Dragged for the body of Lawrence Murray but did not succeed in finding it."
- 3 September--Other ships moving on the river.
- 4 September--Other ships moving on the river.
- 5 September--"Recovered the body of Lawrence Murray W. R. Steward and sent it on shore for internment."
- 6 September--Other ships moving on the river.
- 7 September--"At 9.20 the Barney Morse went up the river."
- 8 September--Received 33½ tons coal. Genessee went up the river and returned.
- 9 September--Mahaska went up the river and returned.
- 10 September--Rear Admiral Sar visited ship; squadron formed line of battle. "Commander T. M. Stevens was detached from the vessel Commander John P. Bankhead took command in accordance to orders from the Navy Dept. Previous to Capⁿ. Stevens leaving he derated all the petty officers."
- 11 September--"At 10 Capn. Stevens left the vessel. Capn. Bankhead continued the rates of all the petty officers."



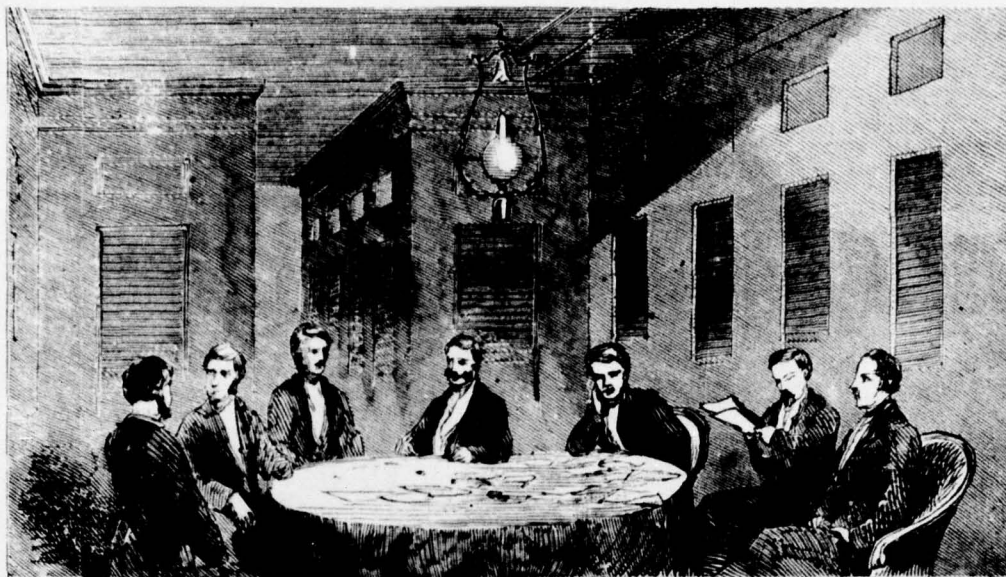
WHEEL HOUSE

Detail from Harper's Engraving showing
Wheel House



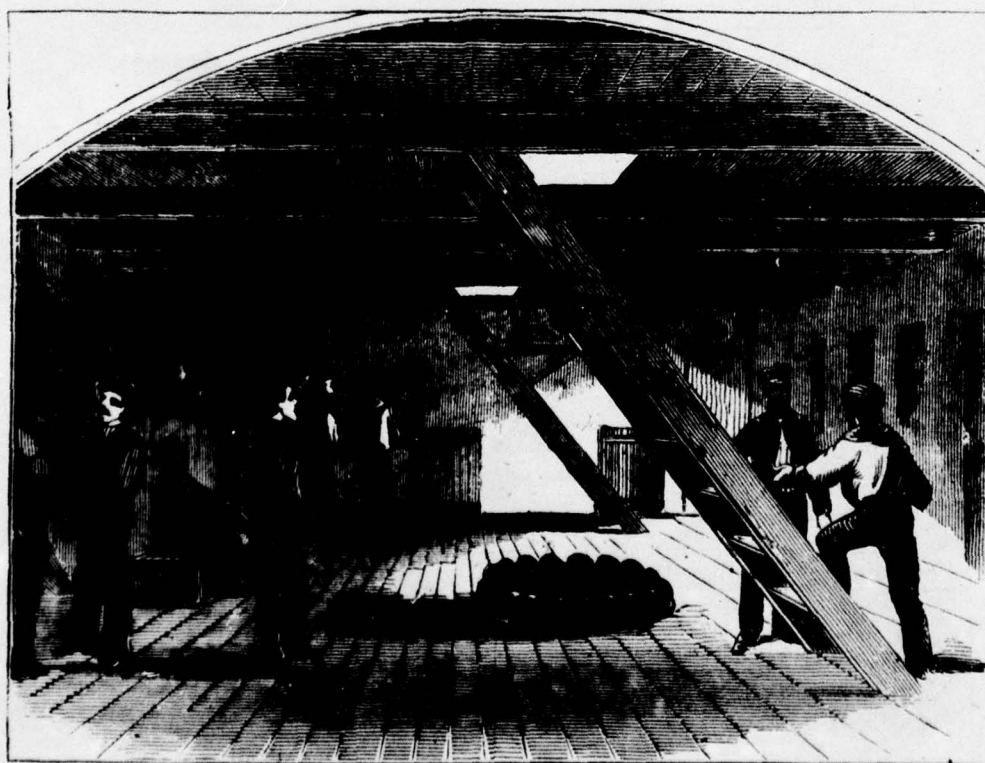
CAPTAIN'S CABIN.

Detail from Harper's Engraving showing
Captain's Cabin



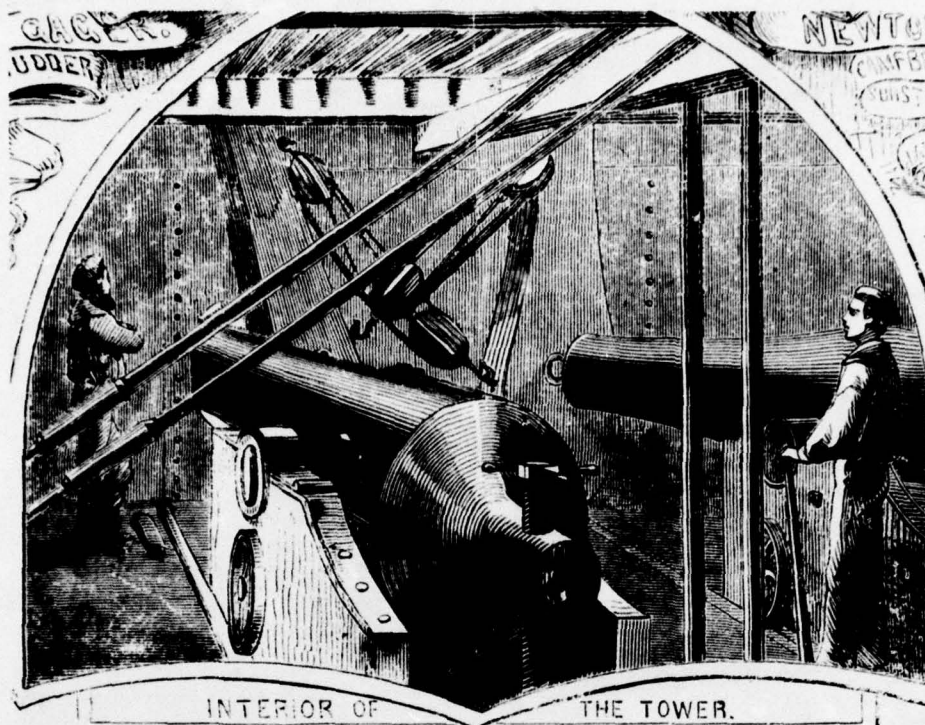
WARD-ROOM

Detail from Harper's Engraving showing
Ward Room

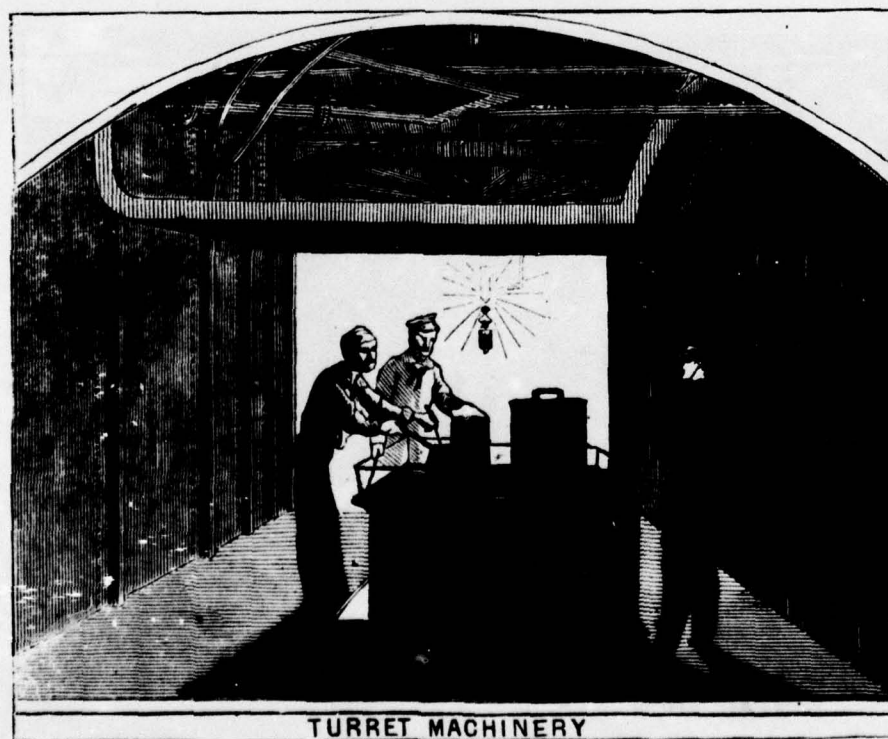


BERTH DECK.

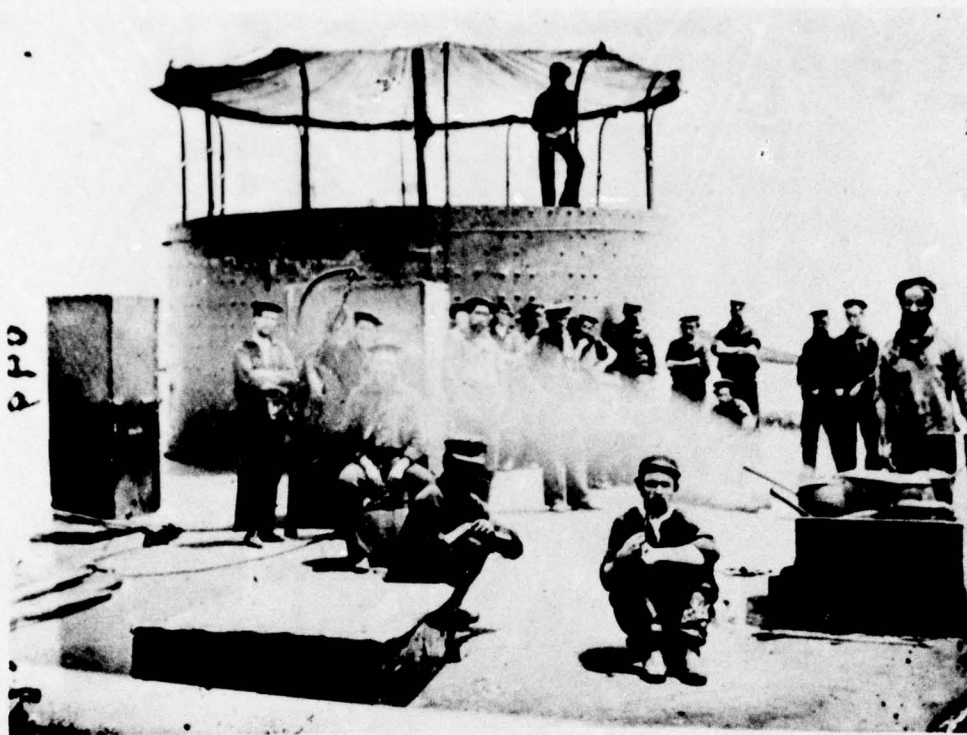
Detail from Harper's Engraving showing
Berth Deck



Detail from Harper's Engraving showing
Interior of the Turret



Detail from Harper's Engraving showing
Turret Machinery



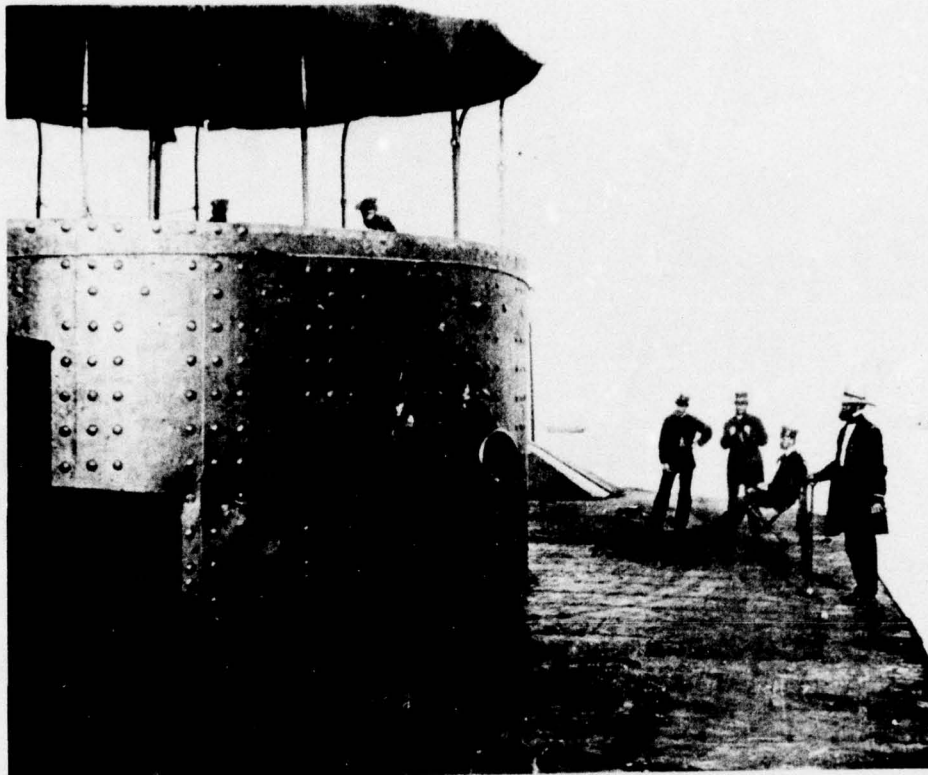
Crew of the USS Monitor cooking on deck,
9 July 1862.

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ENGINE-ROOM

Detail from Harper's Engraving showing
Engine Room



Deck Scene Photograph by James Gibson on the
James River 9 July 1862
The Officers are: (l-r) R. W. Hands, L. N.
Stodder, A. B. Campbell, Wm. Flye
Lib. of Congress



Crew members playing checkers and reading on
the James River, 9 July 1862.
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THE LAST VOYAGE

401

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Title: Narrative of the Sinking
of the USS Monitor

INTRODUCTION:

In a communique dated 3 January 1863, Acting Rear Admiral S. P. Lee, Commander of the North Atlantic Blockading Squadron, informed the Secretary of the Navy, the Honorable Gideon Welles, that the Union's most famous ironclad had foundered at sea. He stated in part,

I have the painful duty to perform of reporting the loss of the Monitor at sea, south of Cape Hatteras, on Tuesday night, the 30th ultimo. . . . I left it to the discretion of their commanders to choose the weather and time of their departure.¹

The Official Records recorded the reports of the commanding officers which describe the circumstances that culminated in the catastrophe and the names of the sixteen officers and crewmen who were lost. A Congressional investigation was called for but the more pressing problems of civil war compelled its abandon.² The contemporary newspapers and periodicals carried accounts by the survivors but more important battles soon drew public attention. Thus, the telling of a great sea battle went untold except in private journals, personal letters, and at veterans' gatherings. The battle was not of heavy shot versus iron plating, for the Monitor had already proven her ability to fight another ironclad. The battle was a perennial one, man and ship against the sea,

of which the heavy iron armor of the Monitor was no defense.

During its service life of only nine months, the USS Monitor had inscribed with indelible ink the annals of Naval history with its auspicious arrival at Hampton Roads on the evening of 8 March 1862 and the ensuing battle the next day. One little ship manned by forty-nine volunteers had reversed the U. S. Navy's blackest day into victory. Little was known, however, of the greater battle fought on the voyage down from New York and again less than a year later upon leaving Hampton Roads for Beaufort, North Carolina, of men and machine against a raging sea. Histories tend to glance over the small, perhaps insignificant details of history, losing forever the personal sacrifices and acts of heroism of the common man. We are fortunate in this instance that some of these details have been preserved. For the complete story of the Monitor includes the story of the men who fought her against ironclad and sea, who lubricated her gearing with their sweat and toil and who were forced to abandon her on a stormy December night in 1862. The Monitor maintains a unique position in Naval history, that of a switch from wood to iron. The days when they built warships of wood and men of iron had passed. All modern warships were to be built of iron and a different seaman had to be forged to man the new ships. The age of steam engineering had arrived when ships lost their graceful lines and white sails and became more

complex with machinery. But there was not time to train the new breed of seamen to man a ship the likes of which no ordinary seamen had seen before. The men who answered the call for volunteers must have been an interesting lot, men like Samuel Lewis, alias Peter Truskitt, Quartermaster.

We sailors generally shipped under some other name on account of danger running foul of bad captains or bad ships, when we might have to decamp at the first port, and were not particular about leaving any clews behind. That is why I called myself Truskitt. I ain't much of a scholar, and can't put it as nicely as they do in the *Century*,* but I think I can tell a few facts about the fight that the magazine missed. I and my partner, Joe Crown, were in Bombay when the war broke out. We had both served in the Navy before, and were anxious to get into it again. I had medals for service on both British and Russian men-of-war, and the news that there was fighting over the water sort of fired men up. Well, the upshot of it was that Joe and I shipped for New York, and when we got there enlisted. We went on board the receiving ship North Carolina and had followed the dull daily routine for a week or so when Ericsson's Monitor, about which something had been whispered among the men, was completed, and a call was made for volunteers to go and man her. We understood that she was bound for Hampton Roads. . . .

The next day we went on board. She was a little bit the strangest craft I had ever seen; nothing but a few inches of deck above the water line, her big, round tower in the center, and the pilot house at the end. . . .**

We had confidence in her though, from the start, for the little ship looked somehow like she meant business, and it didn't take us long to learn the

*A contemporary magazine

**The fact that this ship had two pointed ends obviously had this sailor confused.

ropes. Joe was made gunner's mate of the first gun and I was loader.³

If Peter Truskitt was a novice before the Monitor left New York, he certainly knew as much as anyone on board about taking an ironclad to sea when they arrived at Hampton Roads. His recollection of the loss of the Monitor and others such as William F. Keeler, Paymaster, Francis B. Butts, Landsman, and Dr. Grenville M. Weeks, Surgeon has enabled the authors to piece together the events of the sinking, combining separate accounts and reports into a common narrative. The initial attempt at this was made by Capt. Ernest W. Peterkin,⁴ USNR, in December, 1970, and after additional researching, a combined effort was made to further refine the narrative with the objective of better estimating the last known position of the Monitor, thereby localizing the search area.

November, 1862

The final episode of the Monitor begins with the Monitor returning to the scene of her engagement with the Virginia at Hampton Roads after spending two months in the Navy Yard at Washington for much needed repairs and overhaul of her machinery. While in the yards, many improvements and corrections were made. Acting Paymaster William F. Keeler in a letter dated 17 November 1862, to his wife describes the improvements.

Our vessel has undergone a variety of changes.
A large telescopic smoke pipe capable of being

run up some thirty feet, takes the place of the two low square box like things you see in the photograph. The fresh air funnels have been replaced by two much higher. Our old boats were all left behind and we were furnished with others better adapted to our wants and large iron cranes and davits to raise them out of the water and carry them on, instead of dragging them up to our decks to be in the way, or dragging them in the water after us.

The ragged shot marks in our side have been covered with iron patches and the places marked "Merrimac," "Merrimac's Prow," "Minnesota," "Fort Darling," to indicate the source from whence the blow was received. New awnings have been furnished us, ventilators for our deck lights and many other little conveniences which would have added greatly to our comfort last summer could we have had them then.

Our guns have had engraved in large letters, on one of them

MONITOR AND MERRIMAC
WORDEN

and the other

MONITOR AND MERRIMAC
ERICSSON

Below, the Berth deck has been raised so that we can barely stand erect under the deck above, and the store rooms on each side thrown back some four feet. This arrangement makes the berth deck considerable wider but not as high, the width however is what we want.

Below this deck I have two good store rooms for provisions and there is also a shell room. A large blower, driven by an engine attached, is placed partly above and partly below this deck, which draws the air down through the pilot house and through the deck lights (when open) in the ward room and our state rooms and forces it into the engine room to aid the draft of the furnaces.

Three or four nice black walnut steps lead down from the berth deck to the Ward room. This room and our state rooms have been newly painted white and a new oil cloth put on the floors. With our bright lamps burning at night our Ward room looks as bright and cheerful as could be desired. When cool steam is turned on the radiators and a very comfortable temperature maintained. . . .⁵

Thus the long dull drudgery of blockade duty for the Monitor and her crew had ended. The ship had received the much needed overhaul, her bottom had become so fouled and her machinery so worn that a board of survey had condemned the engines and boilers stating that the ship was "in a very precarious condition."⁶ In addition, the men had received the long overdue leave, many returning to their homes. They returned to find their ship the center attraction in Washington, the decks crowded with women and children to whom the officers were obliged to give tours of the famous warship.⁷

But soon, with the repairs nearing completion and rumors of a second Merrimack, the men of the Monitor had to return to the business of war.⁸ Supplies were taken on board and the Monitor got up steam once more for Hampton Roads. All were merry and jubilant as the Monitor cruised down the Chesapeake with the promise of new victories on the horizon. Having replenished their wardroom stores, they ate well.

We breakfast at eight, lunch at twelve and dine at five. Our breakfast is usually fried oysters, beefsteak, fish balls, mutton chops, with an abundance of vegetables, sweet and common potatoes, etc. For lunch we usually have oysters or cold tongue, lobster (in cans), cold roast beef or

corned beef, sometimes cold boiled ham, sardines, crackers, cheese, etc.

Dinner is the meal, soups, stewed oyster, boiled salmon, roast beef, mutton or turkey, boiled ham, and so on through a whole hotel bill of fare with all the sauces, condiments and fancy pickles. But our attempt at pie, pudding, etc. makes me wish for home made — we are well supplied with apples, nuts, raisins, and figs, etc.⁹ Don't imagine we are going to starve. . . .

The Monitor arrived at her old mooring off Newport News, Virginia at noon on Monday, 10 November 1862 to find that the war on the Peninsula had not progressed very far.¹⁰ For over a month the crew of the Monitor watched as troop transports unloaded their cargoes and eagerly waited for word from the front.

The days stretched out into weeks and still no orders for the anxious little warship. William Keeler in one of his letters relates the monotony of his daily routine —

The first thing I hear in the morning about day light is the Bo'sun's whistle and "all hands up hammocks." As "all hands" don't refer to me, I roll over and take another nap till my boy comes in to leave my boots and tell me "'tis half past seven sir." He has previously taken the iron plug out of my deck light and let in a glimpse of day.

I dress and get ready and at just eight breakfast is ready. No one is in a hurry so that usually occupies an hour when all hands are mustered to quarters, that is each one takes the position assigned him in action and upon being questioned in turn relates the particular duty devolving upon him — then the turret division (those who fight the guns) are drilled for an hour or so.

The Surgeon and Paymaster, who are the drones, as we have no watch duties to perform pass our time as we see fit. I find considerable writing to do, and shall till I get fairly posted in all details of my work. The Dr., whose room joins mine, bores me to death by wanting to read me all his correspondence with his lady love and the newspapers in which of course I take no special interest, but he is a good, genial, warm hearted fellow and I humor him when I am not too busy.

Dinner at two, we have a regular course, soup, fish, meats, puddings, fruits and nuts, winding up with a cup of strong coffee. This takes an hour or an hour and a half, then those who choose take a cigar on deck.

Supper at six which is usually bread and butter, dried beef, cheese, crackers, coffee and tea.

At seven o'clock the bo'sun's whistle again and all hands down hammocks. In the evening all gather around the ward room table and "fight their battles o'er again" each one relating his individual experiences, stories are told and jokes cracked, till ten when all on board must be quiet and still. It is usual on men of war to have all lights extinguished at ten but this is not enforced in our case, we appear to be an exception to ordinary men of war. . . . 11

It was through the stories, the newspapers and acquaintances of fellow officers that the men of the Monitor learned of their engagement with the Virginia.¹² Even though they had participated in the battle, few knew the events of the day as all were below their iron deck, fighting their ship. Visiting officers related their stories as the officers gathered around their wardroom table at night.

But of those noble fellows on board the Cumberland, too much cannot be said, they deserve much more credit than ourselves. Her 2nd Lieut. (Selfridge) was on board of us for a day or two after the

fight as commanding officer & (it) would make your blood run cold to hear him describe some of the scenes he witnessed on board during that eventful day.

A Capt. of one of the guns of which Lieut. S. had command, lost both legs at the knee by a shell which in exploding took off one of his arms at the shoulder. After he fell he contrived to get hold of the lockstring with his remaining hand & fired his gun — "Don't mind me boys, stand by your gun to the last," he said while the ship was rapidly sinking. Epau-lettes & gold lace don't cover all the true brave hearts, nor do they conceal all the coward ones.¹³

The monotony of daily routine was broken by frequent trips ashore for the officers and Sunday morning inspections for the crew.¹⁴

On Sundays,

The usual routine of daily work, of men drilling and at quarters, of painting and scraping and etc is not carried on. After breakfast everything is cleaned up nice and at ten o'clock the men are all "mustered for inspection."

Each one is expected to be dressed in his Sunday best and at exactly four bells (10 o'clock) the bo'sun's call musters all hands for inspection. The seamen and petty officers are drawn up on one side of the deck, the firemen and coal heavers on the other. Each man answers to his name as the Lieut. calls the roll.

The Capt. is then informed that the men are ready for inspection. He passes slowly along in front of the lines of men looking closely at their dress, appearance and etc — "Jones why are your shoes not blacked?" Jones having no good excuse, the Paymaster's steward is ordered to stop his grog for a day or two.

"Lieut. what is this man's name?"—"Smith sir."—"Well have his grog stopped for a week for coming to inspection without a cravat."¹⁵

As the months dragged on there were a few changes in the ships company. Acting Lt. William Flye, Second Assistant Engineer George H. White and Dr. Logue were detached and several new officers came aboard to join the crew.¹⁶

The new surgeon was Dr. Grenville M. Weeks whom Keeler thought was a little self conceited but felt that this would wear off in time as Weeks "found his level" and would have made "a companionable inhabitant of our iron craft."¹⁷

Then in the place of Mr. White we have a Mr. (Third Assistant Engineer Samuel A.) Lewis* from Baltimore, a mere boy, nearly a cyphen in our little society. Mr. (George) Frederickson,* one of our Master's Mates, has been promoted to Ensign, which brings him to our Ward room. Another Ensign has also been added, a Mr. (Norman) Atwater* (from New Haven of course as the name indicates). . . . These are all the changes in our little community.¹⁸

In command of the Monitor was Commander John Pine Bankhead who had relieved the well-liked Stevens on 11 September 1862, who had commanded the Monitor for less than a month.¹⁹

Operations were moving farther south and the officers of the Monitor discussed what would be most likely their next assignment. They had heard that the Monitor number two, the USS Passaic, had been launched under the command of Captain Percival Drayton and that the new warship had reached Hampton Roads on 30 November 1862 but was forced to proceed immediately to Washington "to repair some defect in her boilers."²⁰ The other ironclads, the New Ironsides (Captain

*Lewis, Atwater, and Frederickson were among those lost at sea when the Monitor foundered.

Thomas Turner) and the Galena (Lt. Cdr. Leonard Paulding) were present at the Roads as were a number of wooden gunboats and all expected the Navy's new ironclad fleet to receive orders for action as soon as the Passaic was able to join them and perhaps even the new Monitor number three, the Montauk, (Captain John L. Worden of ex-Monitor fame) would arrive in time.²¹ Keeler expected Charleston, South Carolina, to be the next objective but others thought that perhaps it would be Wilmington, South Carolina.²² Regardless, all were anxious to end the monotony; even another trip up the James would have satisfied them.²³ Through the end of November and into December fresh rumors flourished daily about what the next move would be. During the interim mechanics were on board repairing the turret mechanism,²⁴ and in early December a rifle shield or iron breastwork constructed of boiler iron was installed on top of the turret "of sufficient height and strength to protect those behind it from sharp shooters."²⁵

An injury befell the Monitor at this time, the consequence of which is difficult to assess.

The Second Assistant engineer, Mr. Albert B. Campbell,

was in the act of giving some final touches to the machinery, when his leg was caught between the piston-rod and frame of one of the oscillating engines, with such force as to bend the rod, which was an inch and a quarter in diameter and about eight inches long, and break its cast-iron frame, five eighths of an inch in thickness. The most remarkable fact in this case is, that the limb, though jammed and bruised, remained unbroken, — our men in this iron craft seeming themselves to be iron.²⁶

Mr. Campbell wanted to stay with his ship as he was one of the original crewmembers and the most experienced with her machinery and pumps, but it was felt wise to let his leg fully heal and he was transferred to a hospital.²⁷

Finally orders were received and all hands were busy preparing for sea.²⁸

The turret and sightholes were caulked, and every possible entrance for water made secure, only the smallest openings being left in the turret top and the blower stacks through which the ship was ventilated.²⁹

Many of the same procedures of preparing the Monitor for sea were followed as on the first voyage from New York.³⁰ Contrary to the designer's intention the turret was wedged up from its center post and oakum was stuffed around the circumference of the turret to form a seal.³¹ John Ericsson, the designer, claimed that the machined brass ring placed in the deck was a sufficient enough seal.³² In addition, oakum was prepared to be stuffed in the hawse pipe after the anchor was heaved in to seal that nine-inch diameter hole just five inches above the waterline.³³ The helm was moved from the pilot house to the top of the turret by a system of deck chains to make it less vulnerable to a raging sea as the forward section of the ship was continually awash.³⁴

Complete stores, powder and shells were brought on board as there were no Union ports between Norfolk and the next action. Most of this weight was placed well forward in the ship in the newly constructed store rooms under the berthing deck.³⁵

On 24 December 1862, Cdr. Stephen Decatur Trenchard commanding the paddle wheel steamer, USS Rhode Island, received orders to tow the USS Monitor to Beaufort, North Carolina.

24 Dec 1862

Confidential -

Sir: Proceed with the Monitor in tow to Beaufort, N. C. Avail yourself of the first favorable weather for making the passage. Return to this port.

Respectfully yours,

S. P. Lee
Acting Rear-Admiral,
Cmdg. North Atlantic
Blockading Squadron³⁶

Acknowledgment of orders

25 Dec 1862

Sir: I have the honor to acknowledge receipt of your confidential communication of the 24th instant, and will proceed in conformity with your instructions as soon as the weather shall be favorable for the tow.

I am, very respectfully, your
obedient servant,

Stephen D. Trenchard
Commander³⁷

In a letter Keeler recorded that the Passaic finally arrived on the 27th of December and that a

heavy storm is just coming on which when over is usually followed by several days of calm fine weather. We shall hold on here till the storm is over and take advantage of the calm that follows for our trip down the coast.³⁸

Having been cautioned about discussing future military

operations in correspondence, Keeler on the 28th of December wrote

I wish I could whisper in your ear our destination and plans . . . You will have to nurse your curiosity and patience for a little while, when we hope again to make "the little Monitor" a household word.

I am glad now that I wasn't detached and ordered to some other vessel as I desired to be. I wouldn't exchange our "iron box" for any vessel in the navy with our present prospects. . .³⁹

At eight A.M. on the 29th of December the weather was crisp and clear, with the wind gently blowing from the south southwest.⁴⁰ Final preparations were underway as Keeler enjoyed himself on deck

listening to some very fine music from our English neighbor, the Ariadne — she carries a fine brass band. Every morning St. George's cross is hoisted to the tune "God Save the Queen" as I suppose they call it, we call it "America." After they are done saving the Queen they compliment us Yankees with the "Star Spangled Banner," "Hail Columbia," etc, etc which being well played are duly appreciated.⁴¹

Later that morning the two boats on board the Monitor were transferred to the Rhode Island.⁴² Ens. Rodgers of the Rhode Island later wrote that this was a mistake as later in the war all the monitors carried their boats safely at their davits during the heaviest storms.⁴³

The only boat left on board the Monitor was a collapsible one of black India rubber that had an iron frame.⁴⁴ This boat could be stored below.

At nine the Rhode Island exercised her crew at her guns

and completed coaling the ship.⁴⁵ At ten the newly completed monitor Montauk arrived under tow of the U. S. Steamer Connecticut but due to engineering difficulties she had to return to the yards for repairs and so could not accompany the Monitor and Passaic on this voyage.⁴⁶

About midday preparations were being made to pass two hawsers from the Rhode Island to the Monitor. Boat crews passed the cumbersome hawsers between the two ships, one eleven inch in circumference, the other fifteen and about 250-300 feet was let out.⁴⁷ The two hawsers were made fast to the Monitor's towing bit, leading them through the two chocks. Even when dry, the heavy hawsers tended to pull the bow of the little ironclad down, but in their strength lay her safety.

At 2:30 P.M. the anchor of the Rhode Island was hove short and steam was applied to the powerful engine.⁴⁸ As the paddle wheels churned the water, the engine on board the Monitor slowly turned the single screw propeller. The Monitor was finally underway with the bright prospects of future accomplishments on the horizon. The weather also held great promise as the winds had calmed,

being light from the southward and westward,
with a smooth sea.⁴⁹

The Pilot, John H. Bean, guided the two warships down the harbor and past the protective guns of Fortress Monroe.⁵⁰

General joy was expressed at this relief from long inaction. The sick came upon deck, and in the clear sky, fresh air, and sense of motion, seemed to gain a new life.⁵¹

Nothing was better for seamen than to be at sea. Many of the crew not on duty enjoyed the open deck and the gentle seascape with Hampton Roads fading in the distance. The Surgeon, Mr. Weeks observed,

The Rhode Island left in her wake a rolling, foaming track of waves, which the Monitor, as she passed over it, seemed to smooth out like an immense flatiron.⁵²

As the afternoon lingered on, the sky gradually filled with small, puffy, white clouds, but none took alarm as the temperature was a pleasant 58° with the barometer holding steady at 30.1 inches of mercury.⁵³ In the late afternoon the State of Georgia with the ironclad monitor Passaic in tow was seen far in advance of the Monitor.⁵⁴ At 4:45 P.M. the Rhode Island discharged the Pilot off Cape Henry.⁵⁵ The shoal waters of the lower Chesapeake had been traversed safely, only the open ocean and its depths lay between the famous little warship and its next exploit. As they gradually passed out to sea, the wind freshened somewhat and Surgeon Weeks remembered the sunset with

glorious clouds of purple and crimson, a suitable farewell to the Virginia Capes.⁵⁶

At 5 P.M. the officers sat down to their usual meal and the joking was particularly intense as all were in good humor.⁵⁷

The night was fair and calm but with all the deck lights secured for sea, it was not long before the air below decks lost its freshness.⁵⁸ At 5:40 P.M. a sighting was made on Cape Henry Light and it was found to bear to the west, distant four miles.⁵⁹ The weather continued the same through the night and the Monitor

"towed easily, making between five and six knots."⁶⁰

Commander Trenchard on board the Rhode Island issued the following night orders:

The officer of the deck is directed to have a very bright lookout kept off the bow and beam. He will sound at ten o'clock and inform me of the depth of water: also at four o'clock in the morning. The course will be S.S.E. as at present steered until order is changed. Keep a sharp lookout upon the Monitor astern, and should she signal attend to it at once; then report to me. Inform me of every change of wind and weather. The speed of the steamer should be regulated by the sea. If it increases, moderate the speed; if it smooth, increase it. Inform me when the steamer has made sixty miles from 10 P.M.⁶¹

At their present speed they would be approaching the shoals of Cape Hatteras.

Sam H. Field, the Officer-of-the-deck on board the Rhode Island, recorded in the deck log the sighting of two sails

one standing to the northward and eastward, the other standing to the westward.⁶²

Otherwise, the watch was uneventful as the night air was filled with the steady puffing and hissing of the steam engine and the sounds of the paddle wheels churning the water. On board the Monitor, Surgeon Weeks had difficulty sleeping,

suffering from the close air and layed awake in his bunk listening to the steady thump of the Monitor's single engine.⁶³

At ten o'clock Mr. Field on board the Rhode Island took a sounding as directed and recorded twelve fathoms of water. The wind had increased to force two, but the barometer was still holding steady. Course was steady on south southeast with speed a constant six knots.⁶⁴ The many stars visible seemed to foretell of a swift, pleasant journey.

Tuesday, December 30, 1862

The dawn brought continued good weather.⁶⁵ The Surgeon and Paymaster were glad to be able to stroll the open deck again, enjoying the fresh air after a somewhat uncomfortable night. With the deck lights closed, the new ventilator installed in Washington was of little help to draw in fresh air to the living spaces.⁶⁶ Keeler thought to himself that he must compose a letter explaining the dilemma, so that in later ships it might be corrected.*

On board the Rhode Island the smell of breakfast from the galley permeated the ship. Commander Trenchard wrote in his journal,

The wind was light from the south and west; clear and pleasant. The Monitor is making a good headway in the good weather and is turning easily.⁶⁷ Our speed averages five to six miles an hour.

*In later Monitors, fresh air was drawn through the turret and directed through the living spaces and then to the fires.

At five A.M. they began

to experience a swell from the southward, with a slight increase of the wind from the Southwest, the sea breaking over the pilot-house forward and striking the base of the "tower," . . .⁶⁸

forcing the abandonment of the decks for the shelter of the top of the turret. The helmsman at his station on the turret started to feel the force of a rising sea. The officers ate breakfast with a foaming sea washing over their heads as the Monitor gently rolled in the waves. Commander Bankhead and the Acting Chief Engineer, Mr. Watters inspected the sturdy little ship after breakfast and

found the packing of oakum under and around the base of the tower had loosened somewhat from the working of the tower, as the vessel pitched and rolled.⁶⁹

Speed was about five knots.⁷⁰ In the engine room the heart of the ship was steadily chugging as the watch kept feeding the fires with coal. The engineer on duty was constantly alert to the sounds of an uncoiled valve or squeaky rod and paid due attention to the disorder with his oil can. The bilge pumps kept the water that found its way into the interior of the ship at a low level occasionally "sucking" air, making a gurgling sound as the Monitor rolled in the sea.⁷¹

The swells continued from the south, as though indicating a storm in some other part of the ocean but the weather was still clear,⁷²

"the land only a blue line in the distance."⁷³

The watch on the turret reported to Commander Bankhead that the steady working of the ship had worn one of the hawsers at the chock and at 6:40 A.M. the order was given to signal to stop so that new chaffing gear could be parceled to the hawsers.⁷⁴ The waves were now rolling constantly upon the deck of the ironclad and the men had to be very cautious as they worked on the slippery deck. The wind had picked up a bit and the swells seemed to be increasing.⁷⁵ At 7:30 A.M. the Monitor was once again ready to continue the journey. And again signals were passed between the two ships.⁷⁶ The Monitor, not having a mast on which to hoist signal flags, used a chalk board and, when within distance, Commander Bankhead used his horn.⁷⁷

Speed was decreased to four knots as the wind continued from the south, southwest.⁷⁸

Cloud banks were seen rising in the South and West and they gradually increased till the sun was obscured by their cold grey mantle.⁷⁹

Nothing but the cold looking sea could be seen on either horizon. The course was now due south and the next point of land was Cape Hatteras shoals.⁸⁰

Commander Trenchard of the Rhode Island had decided to take the landward sea route which closely followed the North Carolina coastline. Heading south, he had to hug the outer banks to avoid the strong, northerly heading Gulf Stream which skirted the coast. This would bring the two ships

dangerously close to the shoals at Cape Hatteras, an area of the ocean which had well earned all seamen's fear as the graveyard for many a merchantman who failed to keep constant vigil of their position and the depth of water. There were no landmarks on the barren stretch of land between Cape Henry and Cape Hatteras and the outer-banks were so low that an unalert lookout would not spot the breakers until the ship was dangerously close and at the mercy of strong currents and unmarked, constantly shifting shoals. There was greater risk in this route, but the gain of a shortened voyage seemed to outweigh the risk of shipwreck on the shoals.⁸¹ The State of Georgia with the Passaic in tow had taken a route further out to sea.⁸² They would have to fight the two to three knot Gulf Stream on their voyage south. Nothing had been seen of them since passing Cape Henry the previous day.

At 9:30 the crew was mustered and exercised at quarters.⁸³ In the next engagement, the Monitor would increase its rate of fire as the crew had become more efficient and familiar with the task of fighting the guns. Each had his assigned station and duty to perform. They would be well trained for their next engagement.

As morning passed into midday, Paymaster Keeler joined some of the crew on top of the turret. The wind was gusty and he wore his new sea coat which his wife had made for him. He wrote later,

We amused ourselves for an hour or more by watching two or three large sharks who glided quietly along by our sides observing us apparently with a curious eye as if in anticipation of a feast.⁸⁴

Some of the crew were just gaining their sea legs and most seemed to enjoy the steady surge of the ship through the waves. Some ventured out on the deck as though in defiance of the sea. Being on the same level as the sea,

with the spray dashing over us occasionally, amused ourselves with noting its shifting hues and forms, from the deep green of the first long roll to the foam-crest and prismatic tints of the falling wave.⁸⁵

At 11:20 the Rhode Island sounded in eighteen fathoms and at meridian again sounded eighteen fathoms.⁸⁶ At noon Albert Taylor on the Rhode Island recorded in the deck log the dead reckoning position of the two ships as being 35°-25' latitude and 75°-16' longitude. The distance from port as recorded by the sea log was 106 miles.⁸⁷ On board the Monitor, landsman Francis B. Butts relieved the leehelmsman.⁸⁸ It was his job to assist the helmsman in holding the wheel against the force of the sea and to relay the engine orders to the engine room.

At one P.M. the Rhode Island sighted the Cape Hatteras light bearing

"west by southwest fourteen miles distant."⁸⁹

Commander Trenchard recorded this in his journal and checked the charts to ascertain his position. The two warships were making good progress. Soon they would round treacherous Cape

Hatteras and be heading for the next point of land, Cape Look-out and the conclusion of their journey.

Paymaster Keeler and Surgeon Weeks were again companions on top of the turret as the air was close below decks and the sight of water repeatedly filling the decklights was unnerving.

Keeler wrote,

The wind which in the morning was quite light continued to increase till the middle of the afternoon when it blew quite heavy, the sea rolling with violence across our deck rendering it impossible to remain on it without danger of being swept off.⁹⁰

And Surgeon Weeks remembered that

As the afternoon advanced, the freshening wind, the thickening clouds, and the increasing roll of the sea gave those most accustomed to ordinary ship-life some new experiences. The little vessel plunged through the rising waves, instead of riding them, and, as they increased in violence, lay, as it were, under their crests, which washed over her continually, so that, even when we considered ourselves safe, the appearance was of a vessel sinking.⁹¹

There was a small huddle of other crew members on top of the turret. Some were off duty and could not sleep beneath the increasing violence of the sea, while others had been sent above by the Engineering Watch Officer from the suffocating heat of the fire room.⁹²

"I'd rather go to sea in a diving bell!"⁹³
said one, as the waves dashed over the pilot house, and the little craft seemed buried in water.

Another cried,

Give me an oyster-scow! — anything! — only let
it be wood, and something that will float over,
instead of under the water!⁹⁴

The flat deck of the Monitor was continually awash now.⁹⁵

The sea was pounding with great force upon the small pilot house in the bow and was geysering into the air. As the ship rose and fell in the sea, a great plume of water would gush out of the circular anchor well up forward, making a terrific groaning sound as the little warship labored under the great weight on the water on her deck. It was an eerie sound but all had confidence that the Monitor would reappear after burying itself in successive waves.⁹⁶

Captain Bankhead and the Chief Engineer were kept constantly advised of the condition of the ship.

We made no water of consequence; a little trickled down about the pilot house and some began to find its way under the turret rendering it wet and cheerless below.⁹⁷

The storm showed no signs of increasing but the sky ahead indicated that the worst was still to come.⁹⁸ All was going well. The bilge pumps were ample to keep what little water that found its way below at a low level and they had on board a Worthington displacement type pump and the Adam's pump of new design, a centrifugal type pump, capable of pumping 3,000 gallons per minute. Both were steam driven and worked independently of the main engine while the bilge pumps worked

via an eccentric gear off the main engine.⁹⁹

At 4:30 P.M. Cape Hatteras bore northwest by west distant sixteen miles. The lookouts on top of the turret reported a steamer with a ship tow and also sighted the State of Georgia with the Passaic in tow on their port beam. The wind was holding steady at force two coming from the southwest by west. The weather was variable, with occasional squalls of wind and rain, with less swell in the afternoon.¹⁰⁰

As the sun set the swell somewhat decreased and the Monitor began to ride more easily.¹⁰¹ All on board were relieved that with continued good weather, the next day would end their sea voyage.

At five P.M. the officers sat down to dinner, everyone cheerful and happy, and though the sea was rolling and foaming over their heads, the laugh and jest passed freely around. All were rejoicing that at last their monotonous, inactive life had ended and the "gallant little Monitor" would soon add fresh laurels to her name.¹⁰²

After eating, Keeler returned to the top of the turret and found it was dark. The Monitor was now directly off Cape Hatteras. The sea rolled high and pitched together in the peculiar manner only seen at Hatteras.¹⁰³ Cape Hatteras is the farthest eastern point of land on the southern Atlantic coast of the United States. It is known to seafaring men as the Cape Horn of the Atlantic and because of the great toll of

lives and property as the "graveyard of the Atlantic."
The treacherous shoals which extend far out to sea have entombed many a good ship, casting its crew to their fate in a raging sea. The northerly heading Gulf Stream skirts these shoals with a strong current that meanders making it an unpredictable hazard. Woe to any ship that was caught in the grips of this current and a strong southerly gale with the shoal waters of Hatteras to leeward for it meant certain danger and possible destruction.

From sea you cannot see the low-lying outer banks until you are close to the breakers, the only reference being the Cape Hatteras Light which has a visibility of twenty miles. On board the Rhode Island Commander Trenchard was constantly questioning the Officer-of-the-Deck and the Quartermaster for the depth of the water and the bearing to Cape Hatteras Light. With a single line of bearing and the depth of water, an approximate position would be judged. The distance to the light was checked frequently by sending a seaman up the mast to measure the point when he first sighted the light so that through triangulation the distance could be checked.¹⁰⁴ The depth alone could be misleading as the shifting bottom of Diamond Shoals could lead an unsuspecting ship into a trap which the ship would be unable to maneuver out of because of high winds or sea.

On board the Rhode Island, the officers were getting

increasingly uneasy about the situation their tow was in.

Ensign Rodgers of the Rhode Island recalled,

Dark clouds made their appearance to the southward, and a breeze sprang up from that quarter, which increased to quite a gale by sundown. The wind kicked up quite a sea into which the little Monitor pitched and rolled heavily.¹⁰⁵

Rodgers had the first dog-watch on deck, and when he went below at four bells, they were about twenty miles off Cape Hatteras. He turned into his berth that evening, little thinking what a few hours would bring forth.¹⁰⁶

At 6:30 P.M. Paymaster Keeler returned to the top of the turret just as the two ships were being swallowed by darkness. In the fading light of dusk, he noticed a change in the water color from a cold, grey complexion to a green-blue emerald color. The air even smelled different and as the wind blew the sea foam in his face he felt the warmth of the water. The ships had entered the Gulf Stream. The water temperature was recorded as being greater than the air temperature, both being in the balmy 70's. However, the wind had increased to force three.¹⁰⁷

The wind was blowing violently; the heavy seas rolled over our bows dashing against the pilot house and surging aft, would strike the solid turret with a force to make it tremble, sending off on either side a boiling, foaming torrent of water.¹⁰⁸

The order was given for the Monitor to steam close to the Rhode Island so that signals could be exchanged.¹⁰⁹ When

off the quarter of the Rhode Island, Commander Bankhead used his horn to inform Commander Trenchard that if the Monitor needed assistance during the night, they would hoist a single red lantern on the signal mast as it was impossible for the watch to read the chalk board in the darkness and it was getting increasingly difficult to hail the watch using the bull horn. Agreeing on this signal, the Monitor slipped once again to the stern of the Rhode Island. They still were making six knots.¹¹⁰

Assisting at the helm, Francis Butts who had volunteered for duty on the Monitor in November while she was in the yard, remembered

The vessel was making very heavy weather, riding one huge wave, plunging through the next as if shooting straight for the bottom of the ocean, and splashing down upon another with such force that her hull would tremble, and with a shock that would sometimes take us off our feet, while a fourth would leap upon us and break far above the turret, so that if we had not been protected by a rifle-armor that was securely fastened and rose to the height of a man's chest, we should of been washed away!¹¹¹

Commander Trenchard noted in his journal at seven o'clock in the evening that

The wind commenced freshening and hauling more to the south.¹¹²

Watching the little ironclad from the fantail, all on board the Rhode Island feared for her safety as the Monitor would plunge from view behind a swell being nearly submerged in

foam. Many times she disappeared, but each time she reappeared to the relief of those who watched.¹¹³

Surgeon Weeks on board the Monitor recorded the concern of the crew of their famous little warship to be first in everything.

. . . we had rounded the point, and many on board expressed regret that the Monitor should not have been before the Passaic in doing so. Our spy-glasses were in constant use; we saw several vessels in the distance, and about seven P.M. discovered the Passaic four or five miles astern to the north of us, in tow of the steamer State of Georgia. A general hurrah went up—"Hurrah for the first iron-clad that ever rounded Cape Hatteras! Hurrah for the little boat that is first in everything." The distance between ourselves and the Passaic widened, and we gradually lost sight of her.¹¹⁴

The crew were still in good spirits and full of confidence as the last hurrahs became muffled in the noise of an angry sea. However, below in the engine room, Mr. Watters was preparing his machinery as best as he could for the death struggle that was to follow. All bilge injection pumps were on line ready to be operated at the slightest indication of a leak.¹¹⁵ These could pump at a minimum of 2,000 gallons per minute. The computed position of the Monitor at this time was fifteen miles south of Cape Hatteras Shoals.¹¹⁶ All was going well, however, those with a knowledge of the sea were leery for the future.

Shortly after seven P.M. the situation worsened. The smaller of the two hawsers (port side) parted.¹¹⁷ The chaffing

gear had only slowed what was inevitable as the hawser had worn through at the chock because of the incessant pulling and stretching of an uneasy tow in a rough sea. This caused the Monitor to yaw and tow badly,

the vessel working and making more water. The increased motion caused more oakum to be knocked loose and consequently the Monitor was making more water around the base of the turret.¹¹⁸

To counteract these events, the command was given to set the Worthington pumps to work and to ready the centrifugal pump.¹¹⁹ Time for the little ship was running out, the clock had started running and the battle for survival had begun. But she was far from being defeated yet. As long as her crew manned her pumps and fed coal to her fires, she would gallantly struggle.

The pace in the engine room was increasing. The heat was unbearable and the coal heavers had difficulty carrying the coal from the coal bunkers to the furnace doors, many a shovel full being scattered on the iron grating deck as the ship wildly pitched in the raging sea. Stripped to their waists and their sweat mixing with the coal dust, they were covered with grime.

Mr. Watters watched the steam pressure gauge, measuring each pulse of the ship's heart. The fate of the Monitor depended upon keeping the steam pressure up to twenty pounds

and as the gauge fluctuated so did Mr. Watters's heartbeat in his own chest.

A squeaking engine bearing caught the attention of his trained ear and he sent an oilman to remedy the situation. If the Monitor continued to take water at the same rate, her pumps could handle it, she would be victorious in this fight also, he thought to himself, but only if the steam pressure holds. He silently prayed that Providence would smooth the seas for them, not testing his little ship so severely.

Far from the heat of the engine room, topside in the turret, Surgeon Weeks was watching the horizon which was barely visible in the moonlight.

At half-past seven a heavy shower fell, lasting about twenty minutes. At this time the gale increased; black heavy clouds covered the sky, through which the moon glimmered fitfully, allowing us to see in the distance a long line of white plunging foam, rushing towards us, — sure indication, to a sailor's eye, of a stormy time.¹²⁰

At this sight his thoughts drifted off into prayer.

A gloom overhung everything; the banks of clouds seemed to settle around us; the moan of the ocean grew louder and more fearful. Still our little boat pushed doggedly on: victorious through all, we thought that here, too she would conquer; though the beating waves sent shudders through her whole frame. Bearing still the marks of one of the fiercest battles of the war, we had grown to think of her as invulnerable to any assault of man or element, and as she breasted these huge waves, plunging through one only to meet another

more mighty, we thought, — "She is staunch!
She will weather it!"¹²¹

The wind had now increased to force four and the barometer was dropping but still onward the side-wheel steamer pulled the little consort.¹²² Those on top of the turret watched each successive wave swallow their ship. With each swell a great plume of water would rush from the circular anchor well in the bow creating a noise that sounded like a deathly moan and for those who had accompanied the Monitor on her first voyage, it reminded them of a similar struggle just nine months before. The pilot house was being completely submerged and the water was hitting the turret with great force, the water gushing up the sides in a great foamy torrent.¹²³ Water was now making its way down the blower pipes and seepage was noticed in the coal bunkers.¹²⁴ The forced ventilating system on which the fires depended for draft was operated by two steam engines driving large leather belts. If these got wet and stretched, the engineering spaces would be flooded with poisonous gases from the burning coal. Again, the events of an earlier struggle were vivid in the Engineer's mind, almost as though everything was being repeated, uncontrollably.¹²⁵

Mr. Watters started watching the level of the water moving sluggishly in the bilges. He recognized the threat of rising water to his ship. He sent word to Commander Bankhead that the ordinary bilge injection pumps were not sufficient to

keep the water down. They were making more water than the pumps could throw out.¹²⁶ Keeler remembered the report being given to the Captain and the ominous look on his weathered face. Word was sent below to

have ready for use all pumps connected with the engineer's department.¹²⁷

The pace was increasing.

Surgeon Weeks recorded

. . . the air below, which had all day been increasing in closeness, was now almost stifling, but our men lost no courage. Some sang as they worked, and the cadence of the voices, mingling with the roar of the waters, sounded like a defiance to the Ocean.

Some stationed themselves on top of the turret, and a general enthusiasm filled all breasts, as huge waves, twenty feet high rose upon all sides, hung suspended for a moment like jaws open to devour, and then, breaking, gnashed over in foam from side to side.

Those of us new to the sea, and not appreciating our peril, hurrahed for the largest wave; but the captain and one or two others, old sailors, knowing its power, grew momentarily more and more anxious, feeling, with a dread instinctive to the sailor, that, in case of extremity, no wreck yet known to ocean could be so hopeless as this. Solid iron from keelson to turret-top, clinging to anything for safety, if the Monitor should go down, would only insure a share in her fate. No mast, no spar, no floating thing, to meet the outstretched hand in the last moment.¹²⁸

Below decks, the air was hot and damp. Those not assigned to duty tried to pass the time as best they could. Men were scurrying around securing equipment as the little ship was tossing in the sea. There was a steady throb of

life as man and machine synchronized their efforts to survive.

The sea, like the old-world giant, gathered force from each attack. Thick and fast came the blows on the iron mail of the Monitor, and still the brave little vessel held her own . . . !¹²⁹

Huge swells of water were washing upon the deck of the ship, the great weight of the water dampening the movements of the ship.¹³⁰ After each successive swell, the little Monitor would labor to bring its bow to the surface, lifting the great quantity of ocean that was pushing her down. The sounds of the ship as she worked in this sea were eerie, almost as though she was convulsing in pain and agony. Her hull was built for strength, but those below could not help glancing at her iron plates and rivets to see if there was signs of weakness.

Seaman Butts was the first to recognize that the situation was worsening in the engine room. As he passed through the door into the engine room the acid smell of wet, burning coal and sweating men met him.

About eight o'clock, while I was taking a message from the Captain to the Engineer, I saw water pouring in through the coal-bunkers in sudden volumes as it swept over the deck.¹³¹

Mr. Hands, the Engineer-on-Duty was drenched in perspiration and his face was smeared with smudges of coal, but underneath you could see that his complexion was pale, either from lack of oxygen or fright of a feeling of helplessness in the face of a steadily increasing danger.

Mr. Hands shouted over the din of the engine that Butts was to return immediately to the top of the turret and report that

the coal was too wet to keep up steam which had run down from its usual pressure of eighty pounds to twenty.¹³²

Also, Butts was to find Mr. Watters and summon him to the engine room. He had been relieved by Mr. Hands after spending an exhausting afternoon in the engine room.

I immediately went to the engine room, and found the bilge pump connected with the main engine in good condition, and working well, as it had been during the day. I had the discharge-pipe of the centrifugal pump connected to its proper place, and all ready for use, and before leaving the engine room I gave orders to Mr. Hands, the engineer then on duty, in case the water should increase to let me know, and at the same time to start the Worthington pump and use the bilge injection.¹³³

He then left to report to Captain Bankhead the seriousness of the situation. On his passage through the turret he noticed the great waterfall of water with each swell that was pouring in where the oakum had been loosened.

When she rose to the swell, the flat under surface of the projecting armor would come down with great force, causing a considerable shock to the vessel and turret, thereby loosening still more of the packing around its base.¹³⁴

When he reached the top of the turret he noticed that the wind had hauled more to the southward and had freshened with rainy and squally weather.¹³⁵ Engineer Watters reported to the Captain the wet coal and dropping steam pressure and

both parted with hopes that the storm would soon subside.

On board the Rhode Island, the watch was restless with anxiety for their tow. The Monitor seemed to be nearly swallowed up by the raging sea. Watson on board the Rhode Island later wrote

It was soon seen that the Monitor was making heavy weather of it and the engines were slowed down, but the course was still kept head into the wind and sea.¹³⁶

He remarked

This was a mistake, for experience later on in towing other vessels of her class proved that the safest way to handle them in heavy weather was to let them lie in a trough of the sea, when the waves would wash over their decks and the rolling would not be excessive.¹³⁷

Captain Bankhead ordered the Engineer to put on the Worthington pump bilge injection, and to get the centrifugal pump ready, and to report back to the top of the turret immediately if he perceived any increase of the water.¹³⁸ Surgeon Weeks remembered that the pumps were instantly set in motion, and that they watched their progress with an intense interest.¹³⁹ The struggle of machines of new invention versus rising water had begun. Paymaster Keeler wrote that the pumps kept the water down for a time but he vividly remembers the report from the Engineer as the wind was howling on top of the turret.

A group of officers were huddled to the side as huge waves broke upon the deck and filled the surrounding air with white foam and a thunderous roar. The Engineer poked his

head up through the hatch and carefully maneuvered over to the officers standing in their long dark blue sea coats.

His message was short but it spelled out the doom of the famous little warship

"The water is gaining on us, sir."¹⁴⁰

She had seemed to us like an old-time knight in armor, battling against fearful odds, but still holding his ground. We who watched, when the blow came which made the strong man reel and the life-blood spout, felt our hearts faint within us; then again ground was gained, and the fight went on, the water lowering somewhat under the laboring pumps.¹⁴¹

When Mr. Watters returned to the engine room, he found the water about one inch deep on the engine room floor and he quickly looked around to confirm that the Worthington pump and bilge injection were in use and working properly.¹⁴²

As the storm continued to rage and delve out a punishment as only a Cape Hatteras storm can, the pumps kept pace with the in-rushing water for almost an hour.¹⁴³

On board the Rhode Island, the Quartermaster at 8:45 P.M. made a line of sight with Cape Hatteras Light bearing "N $\frac{1}{2}$ W distant 20 miles."¹⁴⁴ Soon they would be clear of the "Cape Horn of the Atlantic," if the Monitor could just hold ground with the flooding water.

However, on board the little ship, the reports of increasing water continued and it soon became apparent to the Commanding Officer that they were fighting a losing battle. In his

report, Commander Bankhead stated;

I am of the firm opinion Monitor must have sprung a leak somewhere in the forward part where the hull joins on to the armor, and that it was caused by the heavy shocks received as she came down upon the sea.¹⁴⁵

Keeler explained the critical situation in a letter.

The opening through which the water was rushing was rapidly enlarged by the constant beating of the sea, which was now at times rolling over the top of the turret. Again came the report that the water was gaining and had risen above the engine room floor.

In order to understand our situation and contrast it with our passage from New York to Hampton Roads last spring, it will be necessary to bear in mind that in the latter case, "the sea was on our beam" as sailors term it, that is, the wave would come up on our side, rolling onto us on one side and off on the other.

Now we were going "head on," or in other words were crossing them at right angles. Now her bow would rise on a huge billow and before she could sink into the intervening hollow, the succeeding wave would strike her under her heavy armor with a report like thunder and a violence that threatened to tear apart the thin sheet iron bottom and the heavy armor which it supported.

Then she would slide down a watery mountain into a hollow beyond and plunging her bow into the black rolling billow would go down, down, down, under the surging wave till naught could be seen but the top of the black "cheese box" isolated in a sea of hissing, seething foam, extending as far as we could see around us.

Then as she rose slowly and sullenly under the accumulated weight of waters, the foam pouring in broad sheets off the iron deck, a wave would roll over the bow and strike the pilot house with a force that would send the water in torrents on to the top of the turret, where our little company were gathered.

From behind the iron breastwork which surmounted the top of the turret, a circle of anxious faces were gazing over the expanse of angry waters, and awaiting with anxiety the report from the pumps.¹⁴⁶

"The water is gaining on us, sir."¹⁴⁷

It was the death knell of the Monitor. The storm continued to increase in fury.

Surgeon Weeks felt the increase in the storm,

the waves now dashing entirely over the turret, blinding the eyes and causing quick catching of the breath, as they swept against us.¹⁴⁸

Seaman Butts recalled the order to signal the Rhode Island of their distress at about half-past eight.¹⁴⁹ At nine o'clock the Rhode Island recorded in her log that she acknowledged the signal and stopped her engines.

At nine o'clock Captain Bankhead signaled us to stop the engines, and finding that the Monitor had fallen off into the trough of the sea, and that the waves were making a complete breach over her, we started the engines again.¹⁵⁰

Commander Bankhead of the Monitor wrote

Signaled several times to the Rhode Island to stop, in order that I might ascertain if, by so doing, she would ride easier, or decrease the influx of water, but could perceive no difference, the vessel falling off immediately into the trough of the sea and rolling heavily.¹⁵¹

I remained in the engine room, and finding that the water did not decrease, I had the centrifugal pump started. It worked well and constant but still the water increased.¹⁵²

Up on the turret, Butts remembered the report from the Engineer.

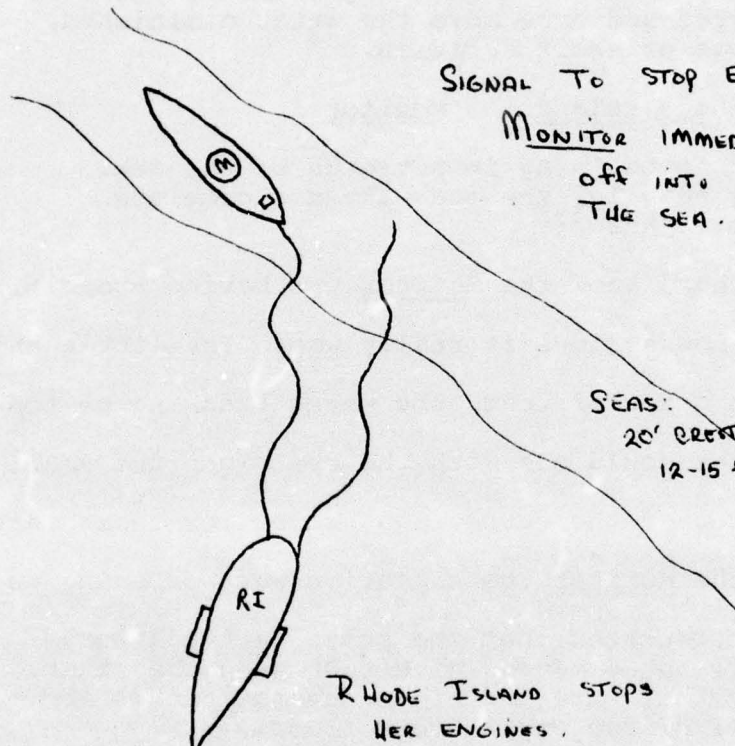
9:00 PM
30 DEC. 1862

WIND
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SIGNAL TO STOP ENGINES.

MONITOR IMMEDIATELY FALLS
OFF INTO A TROUGH OF
THE SEA.

SEAS:
20' CREST-TO-CREST
12-15 FEET IN HEIGHT



RHODE ISLAND STOPS
HER ENGINES.

The water in the vessel was gaining rapidly over the small pumps, and I heard the Captain order the chief engineer to start the main pump, a very powerful one of new invention. This was done and I saw a stream of water eight inches in diameter spouting up from beneath the waves.¹⁵³

Keeler related additional information about this large pump in his letter.

As a last resort the large centrifugal pump, of a capacity of three thousand gallons per minute, was started and once more the water diminished, but it was of short duration.¹⁵⁴

From the Rhode Island the Monitor

appeared to be lying in a trough of the sea, laboring heavily, the sea making a complete breach over her.¹⁵⁵

Commander Trenchard knew the Monitor was having trouble, but he didn't know how serious it really was. The little ship was immersed in a sea of foam, the waves breaking on top of the turret. They could see with the eye glass the small huddle of men on top of the turret and prayed for their safety.

On board the Monitor the situation was worsening as the engineer reported that the pumps were all working well, but produced no effect upon the water, which by this time had risen several inches above the level of the engine-room floor.¹⁵⁶

At 9:15 P.M. Commander Trenchard gave the order to proceed slow¹⁵⁷ to try to keep the Monitor head into the wind and sea.

The steamer was then brought head to wind and sea, under easy steam, and the Monitor rode much easier, and made better weather.¹⁵⁸

At 9:30 P.M. Commander Trenchard recorded in his journal that

it blew a gale, attended with rain and squally weather.¹⁵⁹

Commander Bankhead also noted the increasing fury of the storm as the

sea continued to rise, the vessel striking heavily forward.¹⁶⁰

The Monitor at this time was working heavily in the sea as she lifted the great quantities of water on her deck each time her bow struggled for the surface.

At 10 P.M. the inevitable report came from below, the leak was gaining on the pumps.¹⁶¹

The side-wheel steamer and her small consort were barely making headway. The Rhode Island had reduced her speed to three knots and against such a wind and sea was scarcely enough to keep way on.¹⁶² The wind was howling from the southwest by south and had increased to force six.¹⁶³ The heavy rain had reduced visibility considerably and at times would hit a man's face traveling horizontally with the surface of the sea.

The storm was at its height, the waves striking and passing over the Monitor, burying her completely for the instant, while for a few seconds nothing could be seen of her from the Rhode Island but the upper part of her turret, surrounded by foam.

This was caused as follows: a huge wave would lift her up, when, in descending to meet another, instead of riding it like other vessels, she plowed through, the projecting armor at her bow striking the water with such force that the spray and foam were thrown around her to the distance of forty feet.¹⁶⁴

In the engine room, the water was gradually increasing,

threatening the draft to the fires.

The ashpits at that time were more than half full of water, allowing but very little air to reach the fires.¹⁶⁵

Mr. Watters reported to Captain Bankhead that he would have to reduce the speed of the main engines in order to save steam for the use of the Worthington and centrifugal pumps.¹⁶⁶ But still the pressure of steam decreased and the amount of water in the ship increased. At the same time the blowers, used for producing a current of air to the fires, were throwing a great amount of water.¹⁶⁷ The situation in the engine room was becoming critical. Mr. Watters and his crew of Engineers and Coal Heavers were working at a feverish pace but to no avail as the water was constantly increasing. They were splashing around in several inches of water as the water was edging towards the level of the fires.

When the fires were reached, the vessel's doom was sealed; for with their extinction the pumps must cease, and all hope of keeping the Monitor above water more than an hour or two would expire. Our knight had received a death blow, and lay struggling and helpless under the power of a stronger than he.¹⁶⁸

The Monitor was now sluggishly moving through the sea, her decks continually awash, but she still continued to pound in the sea as she would ride up one swell and through the next.

This constantly striking the water with the force that it did, and the immense weight of ammunition in her hull, must of separated one (hull) from the other, . . .¹⁶⁹

Thus sealing her fate.

The storm showed no signs of decreasing and the barometer was still dropping.¹⁷⁰ Soon it became obvious to all that all hopes of saving the famous little warship were being washed away by the storm.

The looks on the faces of the officers as they huddled on top of the turret were stern and weathered. They had fought their ship against iron plate and iron shot and had won, but the unceasing punishment of the stormy waters off Cape Hatteras had proved too great a foe. All knew that the end was near, it was only a matter of time.

A consultation was held, and, not without a conflict of feeling, it was decided that signals of distress should be made. Ocean claimed our little vessel, and her trembling frame and failing fire proved she would soon answer his call; yet a pang went through us, as we thought of the first iron-clad lying alone at the bottom of this stormy sea, her guns silenced, herself a useless mass of metal. Each quiver of her strong frame seemed to plead with us not to abandon her. The work she had done, the work she was to do, rose before us; might there not be a possibility of saving her yet? her time could not have come so soon.

We seemed to hear a voice from her saying,—
"Save me, for once I have saved you! My frame is staunch still; my guns may again silence the roar of Rebel batteries. The night will pass, and calm come to us once more. Save me!" The roar of Ocean drowned her voice, and we who descended for a moment to the cabin knew, by the rising water through which we waded, that the end was near.¹⁷¹

She was now found to be fast sinking, and a consultation was held as to whether it was best to abandon her or not. The engineer, entering at this moment, reported that the water in the ward-room was waist deep; that it was still gaining rapidly, and that in less than two hours she must go down.¹⁷²

Commander Bankhead gave the order to raise the red lantern, the prearranged signal of distress.¹⁷³

Again and again it was repeated and signal after signal flashed out amid the storm. . . .¹⁷⁴

The men were quiet and controlled, but all felt anxiety. Master's Mate Peter Williams suggested bailing in the faint hope that in this way the vessel might be kept longer above water.¹⁷⁵

Paymaster Keeler led the way, in company with Stocking, Williams, and one or two others, and though the water was waist deep, and they knew the vessel was liable to go down at any moment, they worked on nobly, throwing out a constant stream of water from the turret.¹⁷⁶

Every pump was at work and gangs of men had been organized to bail, more however with the design of keeping them employed and preventing a panic than with the hope of any good result. The water was already a foot deep on the engine room floor and was fast deepening in the Ward Room.¹⁷⁷

Words cannot depict the agony of those moments as our little company gathered on the top of the turret, stood with a mass of sinking iron beneath them gazing through the dim light, over the raging waters with an anxiety amounting almost to agony for some evidence of succor from the only source to which we could look for relief. Seconds lengthened into hours and minutes into years.¹⁷⁸

From [the waters] rapid influx it was very evident that but a short time would elapse before it would reach the fires and then the iron heart of the Monitor would cease to beat.¹⁷⁹

The Chief Engineer reported that the coal was so wet that he could not keep up steam, and I heard the Captain order him to slow down and pull all steam that could be spared upon the pumps.¹⁸⁰

Our consort stopped and attempted to come alongside, but with the two vessels connected with the hawser it was found impossible.¹⁸¹

↓

Captain Bankhead shouted, "Who'll cut the hawser?" "I will," answered Mr. Stodder, the Master, and taking a hatchet, climbed down the turret and was followed by two others.¹⁸²

Captain Bankhead later wrote in his report,

Finding that the heavy stream-cable used to tow the Monitor rendered the vessel unmanageable while hanging slack to her bow, and being under the absolute necessity of working the engines to keep the pumps going, I ordered it to be cut. . . .¹⁸³

Butts at the leehelm thought that there was "danger of being towed under" and watched the three volunteers "going cautiously forward holding on the life line, which was stretched around the deck."¹⁸⁴

I saw James Fenwick, quarter-gunner, swept from the deck and carried by a heavy sea leeward and out of sight. . . . Our daring boatswain's mate, John Stocking, then succeeded in reaching the bows of the vessel, and I saw him swept by a heavy sea far away into the darkness.¹⁸⁵

Then Mr. Stodder, holding by one hand to the ropes while the waves were rolling high over his head, severed with many blows the immense rope which united the vessels and safely returned to the turret.¹⁸⁶

Ensign Rodgers of the Rhode Island later criticized this action, but he was not one of the officers who stood on that iron turret knowing that his ship was doomed.

Every seafaring man knows that the safest place for the Monitor that night was astern of and under our lee, and there was not the least doubt in the minds of some of the officers of our ship, all of whom, except the Captain, were from the merchant marine service, that we could have easily held her there, in that position, head to the wind and sea with our ship under easy steam, had the Monitor's people not cut the hawser and thereby cast themselves adrift.¹⁸⁷

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The Rhode Island was obliged to turn slowly ahead to keep from drifting upon us and to prevent the tow-lines from being caught in her wheels. At one time, when she drifted close alongside, our Captain shouted through his trumpet that we were sinking, and asking the steamer to send us her boats.¹⁸⁸

A hoarse unintelligible reply was all that we could get amid the roar of the elements.¹⁸⁹

Again and again it was repeated and signal after signal flashed out amid the storm as we saw no sign of boats and the same unintelligible response induced us to believe that they understood neither our signals or our hail.¹⁹⁰

The minutes slipped by like hours as men were running around with the wild look of terror in anticipation of what was to come.

Every minute was that much nearer certain death to us, and when our signals were not responded to, the word was passed among the men that it was the intention to abandon us to our fate. This made them desperate, and the sailors insisted that we fire upon the vessel.¹⁹¹

On board the Rhode Island, Ensign Rodgers remembered being awakened from an exhausted sleep.

It was nearly eleven o'clock when I was aroused by one of the messenger boys, who told me all the officers were wanted immediately.

On arriving on deck, I first took a look at the weather. The night was dark, not even a star could be seen, but a little light from the moon occasionally struggled through the clouds. There was a stiff breeze blowing from the south, just about such a wind as would begin to make you think about putting some reefs into the topsails of a sailing ship close hauled. There was quite a sea running as you know there always is off Hatteras, even in a moderate gale.¹⁹²

All had to be confusion on board the Rhode Island as the

watch woke first the officers and then started rousing the crew. Sleepy sailors must have been stumbling into officers in the passage ways, trying to orient themselves on a tossing ship.

Commander Trenchard ordered the Rhode Island to stop her engines as the officers were hurriedly briefed on the situation and tasks assigned.

. . . all was excitement on board the Rhode Island and the usual delay in lowering the boats was prolonged.¹⁹³

On the dark deck of the Rhode Island, the coxswains could not find their regular crews, and were forced to grab volunteers.

Every boat on board of this ship has its regular crew, but it was impossible to find them in the confusion and darkness that night, so that each boat was manned by volunteers.¹⁹⁴

Hurriedly the ship's launch was put over the side and lowered cautiously into the raging sea, the sailors nervously grasping the rat lines as each swell approached their small wooden craft, at the order of "away to the rescue."¹⁹⁵

In this interim,

The Monitor forged ahead under the impetus of her headway, and came so close up under the steamer's stern, that there was great danger of her running into and cutting the steamer down.¹⁹⁶

Seeing the approaching danger, the order was promptly given to surge the engines forward.¹⁹⁷

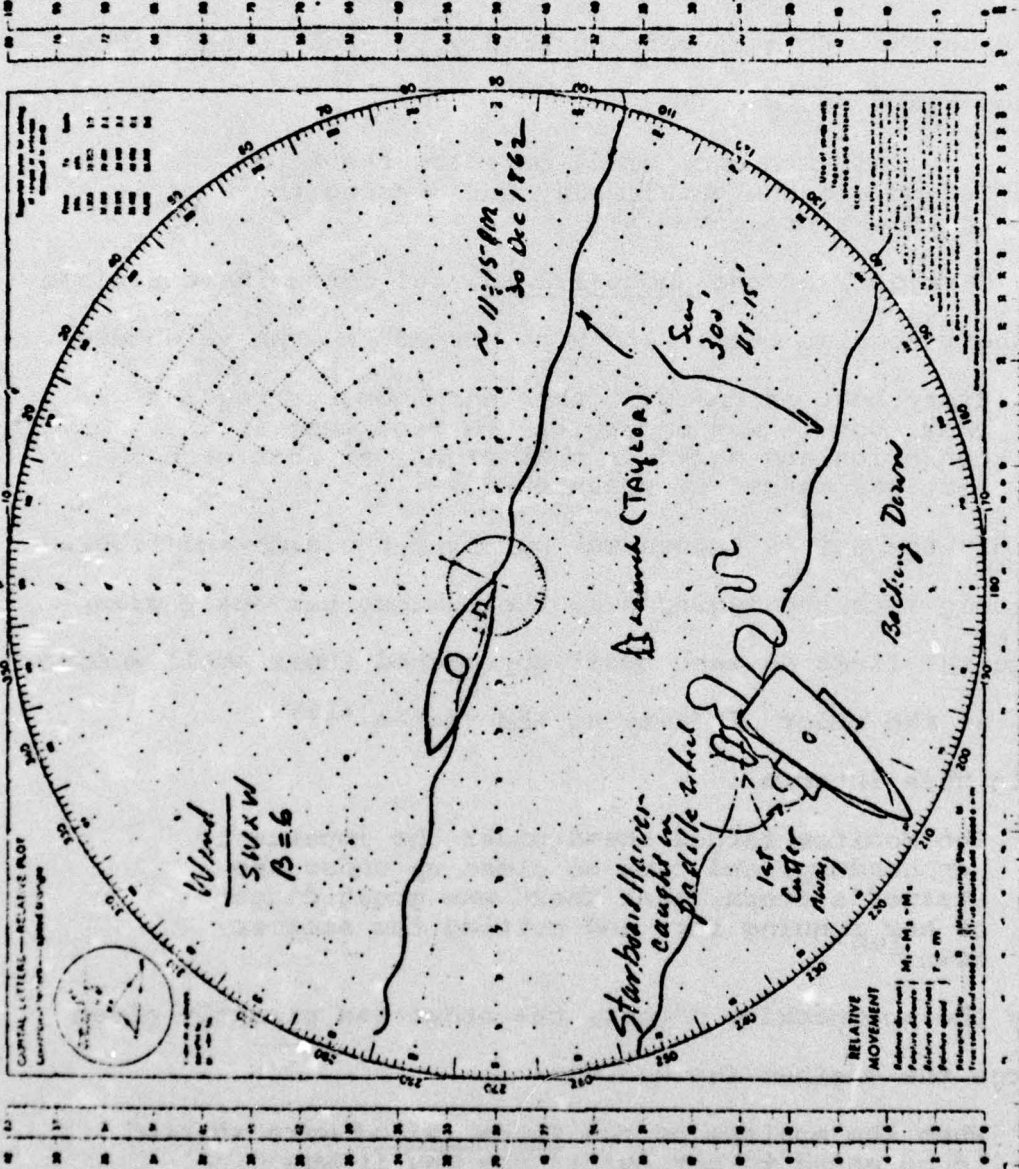
When the engines of the Rhode Island were started to go ahead to get out of the way it was discovered that the hawser had got afoul of the

NO. 100-10

MANEUVERING BOARD

SCALES

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paddle wheel, and when they were put in motion, instead of getting clear of her, the rope wound up on the wheel and drew the vessels together.¹⁹⁸

Meanwhile the boat launched from the Rhode Island had started, manned by a crew of picked men.¹⁹⁹

A mere heroic impulse could not have accomplished this most noble deed. For hours they had watched the raging sea. Their Captain and they knew the danger; every man who entered that boat did it at peril of his life; yet all were ready. . .²⁰⁰

On board the sinking ironclad, the situation was worsening. The water continued to gain upon the pumps and was now²⁰¹ above the ashpits. Butts was ordered to leave the wheel and was kept employed as a messenger by the Captain.²⁰² At 11:30 P.M. with the engines working slowly and all the pumps in full play, Captain Bankhead ordered the Engineer to stop the engines and to apply all remaining steam to the pumps.²⁰³ With no way on the Monitor was at the mercy of a raging sea and she soon found herself in a trough, her beam accepting the full punishment of each wave. Bankhead wrote

The engine being stopped, and no longer able to keep the vessel head to sea, she having fallen off into the trough and rolling so heavily as to render it impossible for boats to approach us, I ordered the anchor to be let go and all the chain given her, in hopes that it might bring her up.²⁰⁴

Butts remembered that the anchor

was let go with all the cable, and struck bottom in about sixty fathoms of water.²⁰⁵

Gradually, the chain took a strain and the bow of the Monitor slowly swung around, "head into the wind."²⁰⁶ However,

WIND

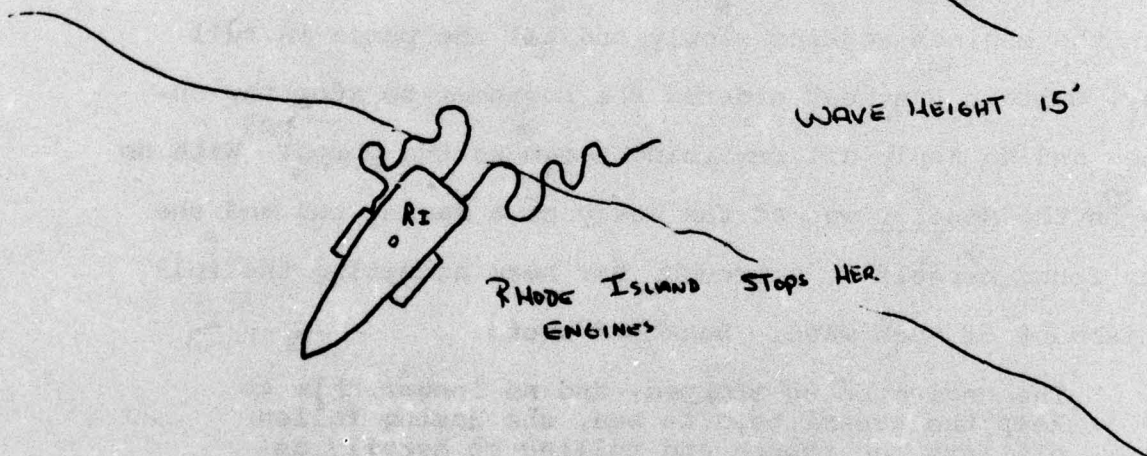
SWXW

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≈ 11:30 PM
30 DEC. 1862



MONITOR, HAVING FALLEN OFF INTO
THE TROUGH AND BEING ADRIFT
DROPS HER ANCHOR.



WAVE HEIGHT 15'

RHODE ISLAND STOPS HER
ENGINES

this was a small reprieve for the fast flooding ironclad.

The fires could no longer be kept up with the wet coal. The small pumps were choked up with water, or as the engineer reported, were drowned, and the main pump had almost stopped working from lack of power.²⁰⁷

This was reported to the Captain, and he ordered me [Butts] to see if there was any water in the wardroom. This was the first time that I had been below the berth-deck. I went forward, and saw the water running in through the hawse pipe, an eight inch hole, in full force, as in dropping the anchor the cable had torn away the packing that had kept this place tight.²⁰⁸

In the cabin he found the water just above the soles of his shoes, which indicated to him that there must be more than a foot in the vessel.²⁰⁹

I reported this to the Captain, and all hands were set to bailing, bailing out the ocean it seemed, but the object was to employ the men, as there now seemed to be a danger of excitement among them.²¹⁰

Butts was handed the buckets on top of the turret, to spill their contents into the sea.

I kept employed most of the time, taking the buckets from through the hatchway on top of the turret. They seldom would have more than a pint of water in them, however, the remainder having been spilled in passing from one man to another.²¹¹

Soon he was again summoned by Commander Bankhead

I was again sent to examine the water in the wardroom, which I found to be more than two feet above the deck; and I think I was the last person who saw Engineer G. H. Lewis as he lay seasick in his bunk, apparently watching the water as it grew deeper and deeper, and aware what his fate must be.²¹²

He called to me as I passed his door, and asked if the pumps were working. I replied that they were.

"Is there any hope?" he asked

. . . feeling a little moved at the scene, and knowing certainly what must be his end, and the darkness that stared at us all, I replied

"As long as there is life there is hope."

"Hope and hang on when you are wrecked" is an old saying among sailors. I left the ward-room, and learned that the water had gained so as to choke up the main pump. As I was crossing the berth-deck I saw our ensign, Mr. Fredrickson, hand a watch to Master's Mate Williams, saying, "Here this is yours; I may be lost" — which, in fact, was his fate. The watch and chain were both of unusual value. Williams received them into his hand, then with a hesitating glance at the time-piece said, "This thing may be the means of sinking me," and threw it upon the deck.²¹³

Men were rushing around below decks, splashing through the water. Some were sorting through their personal gear, trying to decide what to save. The bucket line was breaking down as it was obvious to all it was useless and most were anxious to climb to the top of the turret to await the boats.

There were three or four cabin-boys pale and prostrate with seasickness, and the cabin-cook, an old African negro, under great excitement, was scolding them most profanely.²¹⁴

As I ascended the turret-ladder the sea broke over the ship, and came pouring down the hatchway with so much force that it took me off my feet; and at the same time the steam broke from the boiler-room, as the water had reached the fires, and for an instant I seemed to realize that we had gone down. Our fires were out and I heard the water blowing out of the boilers.²¹⁵

Keeler still standing close to his Captain remembered the report

brought from the engine room that the water had

reached the furnaces and the fires were being extinguished. Our Commander's orders were given calmly and coolly and met with a ready and cheerful response from officers and men; no one faltered in obedience, but a ready aye, aye sir, met every order. Some however obeyed mechanically, while others worked coolly and resolutely as if realizing that our safety depended upon the prompt and ready execution of every order.²¹⁶

About the time the launch and first cutter left us, the big hawser, which was perhaps seventy-five fathoms long, and which as we afterwards learned, had been cut by the Monitor's people got entangled in one of our side wheels, and we were for a time entirely helpless and in great peril.²¹⁷

She drifted toward the Monitor and there was great danger of a collision before the hawser could be extricated. The launch was between the two steamers. . . .²¹⁸

On board the Monitor, the sight of the Rhode Island was comforting, Surgeon Weeks thinking that she was coming to their assistance.²¹⁹

After an hour that seemed an eternity to us, boats were seen approaching; what a load was taken from our anxious hearts—with what interest we watched as they toiled and struggled slowly over the heavy seas, now hidden from our sight in a watery hollow, then balanced on the foaming crest of a mountain wave.²²⁰

But soon their joy turned to terror as the Rhode Island came closer.

"Keep off! Keep off!" we cried, and then we saw that she was helpless.²²¹

Butts, just returning from below reported to the Captain and saw the launch coming alongside, tossing wildly in the sea with the Rhode Island not far behind.

. . . saw a boat alongside. The Captain gave orders

for the men to leave the ship, and fifteen, all of whom were seamen and men whom I had placed my confidence upon, were the ones who crowded the first boat to leave the ship. I saw three of these men swept from the deck and carried leeward on the swift current.²²²

But this was an ill-fated boat.

. . . as we looked, the devoted boat was caught between the steamer and the ironclad,—a sharp sound of crushing wood was heard, thwarts, oars, and splinters flew in the air—the boat's crew leaped to the Monitor's deck.²²³

Her launch was under her quarter and was crashing and grinding most fearfully between the two vessels; its crew had leaped upon our deck to escape being crushed with the boat, and for a time it seemed as if we had but received an addition to our imperilled number.²²⁴

Death stared us in the face; our iron prow must go through the Rhode Island's side, and then an end to all. One awful moment we held our breath. . . .²²⁵

. . . the two vessels had approached so near each other that five or six of the crew of the Monitor seized the ropes hanging from the side of the Rhode Island and started to climb up her side, but only three reached there.²²⁶

From the Rhode Island Ensign Rodgers observed

We drifted down upon the Monitor and it seemed for a few minutes when she was right under our quarter, that she would sink us then and there. She was so close to us that the launch was crushed between the two vessels, and the men in her, together with some of the Monitor's crew whom they had taken off, scrambled or were pulled aboard of the Rhode Island by means of some lines which we threw them.²²⁷

From the turret of the Monitor, Surgeon Weeks watched helplessly as the seas picked up the immense steamer almost on top of them, exposing to view at times her garboard strake.²²⁸
The sounds of crushing wood and the sight of men being yanked

up on ropes by the roll of the ship as they attempted to climb to safety left an unforgettable impression.

It looked at one time as if she would strike the bow of the Monitor, but, fortunately, she just missed it, and scraping along her side, drifted off to leeward.²²⁹

. . . a ships length lay between us, and then we breathed freely. But the boat—had she gone to the bottom, carrying brave souls with her? No, there she lay, beating against our sides, but still though bruised and broken, a life-boat to us.²³⁰

The launch commanded by Acting Ensign A. O. Taylor had its gunwale crushed on the starboard side, but the boat kept above water, and brought off sixteen men, among them Surgeon Weeks, but not without great difficulty.²³¹

Ensign Rodgers had these comments about the seemingly calamitous chain of events. Referring to the cutting of the hawser he wrote

. . . this unfortunate proceeding was the cause of an accident that placed the Rhode Island herself in the greatest peril. No allusion is made in either of the official reports, to the entanglement of the big tow line in one of our side wheels, neither is any good reason given for allowing the two vessels to approach each other so close as to crush a boat between them; nor to the brave conduct of the men from the engineer's department, who went into the paddle-box with their axes and cut the hawser.

The mistake made in cutting the hawser was very unfortunate, but it was soon followed by another, which, I have no doubt, cost the lives of sixteen men and was the immediate, if not the principal cause of the sinking of the Monitor.

. . . the Monitor's people let go her anchor, with the hope and with the result, it appears from Captain Bankhead's report, of bringing their craft

head to the wind and sea, a position which they had a short time before abandoned, when they cut themselves adrift from our ship, although when I was alongside of her about midnight, she lay in the trough of the sea with the waves beating across her decks.

Letting go an anchor twenty miles at sea, with the hope of bringing his craft into a position he had just abandoned, was an expedient of doubtful value on the part of Captain Bankhead; but when this procedure must be accompanied by a catastrophe, that he should have known would sink his vessel in a short time, the question arises, but of course cannot be answered, would the Monitor have foundered that night had her officers that confidence in their ship, that was gained by experience on board other iron-clads, of the monitor type, by other naval officers during the later years of the war.

It was my impression the night of the disaster, and it was the opinion of other officers of the Rhode Island, that all of the Monitor's people, with good management, might have been saved.²³²

Acting Ensign Taylor wrote

The Monitor should not have been lost. She was going against a head-sea. Had she turned back before dark she would have had no difficulty. . . .²³³

These were the opinions of those not aboard the foundering ironclad months after the tragedy—how they would have acted under similar circumstances is an unanswerable question. The regret for actions during a critical situation has been the lament of many a Sea Captain, for in the end all responsibility rests with the Captain. It was Acting Paymaster Keeler's opinion that

Every expedient which human ingenuity or skill could suggest had been tried in vain and all that remained was to save the lives of those on board.²³⁴

Keeler had left the top of the turret to return to his state room upon seeing the launch approaching. When he emerged again, he was quite surprised to see the Rhode Island close aboard.²³⁵

Hoping to be able to get off in one of the approaching boats and to take with me the books and accounts of the vessel, I started for my state room to gather them up.

I passed down the turret ladder, felt my way around the guns and making a misstep fell from the top of the berth deck ladder to the deck below.

A dim lantern swinging to and fro with the motion of the vessel, just served to make the nearest objects visible in the darkness, rendered more dense if possible by the steam, heat and gas which was finding its way in from the half extinguished fires of the engine room.

I passed across this deck, down into the Ward room where I found the water nearly to my waist and swashing from side to side with the roll of the ship, and groped my way through the narrow crooked passage to my state room. It was a darkness that could be felt. The hot, stifling, murky atmosphere pervaded every corner.

After groping about for a little time, I collected what books and papers I deemed it important to save, but found they made so large and unmanageable a mass that the attempt to save them would be utterly useless and would only endanger my life, as my whole physical energies would be required to get me safely over the wave washed deck and into the boats.

I took down my watch, which was hanging on a nail nearby and putting it in my pocket, took out my safe keys with the intention of saving the government "green backs." The safe was entirely submerged; in the thick darkness, below the water and from the peculiar form of the lock I was unable to insert the key. I desisted from the attempt and started to return.

My feeling at [that] time is impossible to describe, when I reflected that I was nearly at the farthest extremity of the vessel from its only outlet, and this outlet liable to be completely obstructed at any moment by a rush of panic stricken men, and the vessel itself momentarily expected to give the final plunge.

Everything was enveloped in a thick murky darkness, the waves dashing violently across the deck over my head; my retreat to be made through the narrow crooked passage leading to my room; through the Ward room where the chairs and tables were surging violently from side to side, threatening severe bruises if not broken limbs; then up a ladder to the berth deck; across that and up another ladder into the turret; around the guns and over gun tackle, shot, sponges, and rammers which had broken loose from their fastenings and up the last ladder to the top of the turret.

I reached the goal and found our consort close alongside, so near in fact, that I expected every instant to see her thrown against our iron side, and both vessels go down together.²³⁶

In the interim, Francis Butts was assisting to the last possible moment, trying to save his ship. In the few short months that he had been aboard he had grown to respect the iron "tin can on a shingle" for what she had accomplished and for what she was capable of. The men who had manned this "cheesebox on a raft" and who had directed her machinery and her guns were now abandoning her. Slowly her boilers cooled and her machinery became idle as the water continued to rise. The worst fears of some of the old sailors when they first layed eyes on her were coming true, she would become an "iron coffin" for some of them.²³⁷

Butts was still in the bucket line as a few devoted

sailors were doing all that could be done until they were called above by the officers and it would be their turn to get in the boats.

I occupied the turret all alone, and passed buckets from the lower hatchway to the man on the top of the turret.

I took off my coat—one that I had received from home only a few days before (I could not feel that our noble little ship was yet lost)—and rolling it up with my boots, drew the tompon from one of the guns, placed them inside, and replaced the tompon.

A black cat was sitting on the breech of one of the guns, howling one of those hoarse and solemn tunes which no one can appreciate who is not filled with the superstitions which I had been taught by the sailors, who are always afraid to kill a cat. I would almost as soon have touched a ghost, but I caught her, and placing her in another gun, replaced the wad and tompon; but I could still hear that distressing howl.²³⁸

The water having put out the fires, the engines and pumps soon ceased to work. The pressure in the boilers measured on the gauge five pounds per square inch.²³⁹ Engineer Watters knew that his ship was doomed. He had done everything that he knew to do. What would have been different had Albert Campbell, the Second Assistant Engineer who was most familiar with the Monitor's engines and pumps been aboard was a haunting question for him. He and his men would not abandon the space until they were ordered to do so.

The men on top of the turret were amazed that the launch was still afloat after the two ships separated. But she was made of wood, not of iron and she would float even in her crushed condition.

Meanwhile, on board of the Rhode Island, Master's Mate Rodney Browne was "begging" Captain Trenchard to allow him to lower his boat (the 1st cutter).²⁴⁰

The Captain said he thought it impossible for a boat to live in such a sea, as even the launch was crippled. I then told him that I was an old whale-man and if I could have a good crew and rig a steering oar, I fully believed I could reach the Monitor.

I called his attention to the fact that a rudder was but little use in such a sea, as, when it was most needed, it might be in the air instead of the water, while a steering oar could always be effective, not only to steer, but to pull a boat's head to a sea more quickly. He consented, and a crew was called to volunteer.

It was astonishing to see how many were eager to go. Fourteen were selected. I then rigged my steering oar and a lashing for my right foot, so the oar could not throw me overboard, and stationed a good man at each boat fall on board the Rhode Island and my crew and self took our places in the boat, the bow oarsman with a knife to cut the fall in case of failure to unhook the tackle. I was at the stern tackle myself.

I then had those on shipboard lower away slowly and watching my chance at the right moment ordered, "Let go all" and we went down on the run, successfully unhooked tackles and we were clear of the ship and our first great danger.

In some way I injured my wrist, but at the time did not realize to what extent. Now began our pull for the Monitor whose red light was plainly visible.

During the gale the wind had varied many points so that the seas were very irregular and we had often to throw the boat's head to the sea to take some larger wave, head and head, and then the value of a steering oar was very apparent.²⁴¹

As Browne and his crew were putting their backs into the oars, the launch was alongside the Monitor. Seeing that she

still floated, sailors were preparing to abandon ship.

Commander Bankhead ordered Lt. Greene

to put as many men into them as they would
safely carry.²⁴²

Peter Truskitt was one of those ordered to the top of
the turret to get into one of the boats.

I was on the companion ladder, just behind my
messmate, Jack O'Brien, and we were both dodg-
ing the third waves, which are always the big-
gest. One had just passed, when he sprang for
the boat, and missed it. I heard him shriek,
"O, God!" and then he was swept away forever.²⁴³

William Keeler was watching this horrible scene, the
men moving very cautiously down the ladder as the two boats
tossed wildly on the sea.

With the heavy sea running it was a difficult
matter to go alongside of her, and the first
boat to reach her was thrown by a wave upon
the deck and a hole stove in her. The next
wave washed the boat off. . . .²⁴⁴

Sensing that the boats might be destroyed and that the
men were moving too slowly, Commander Bankhead ordered Keeler
to lead them.

Already two or three of our number had been swept
off and those who remained seemed to hang back
fearing to make the effort.

Upon the order from Captain Bankhead to "lead the
men to the boats," I divested myself of the great-
er portion of my clothing to afford me greater
facilities for swimming in case of necessity and
attempted to decent the ladder leading down the
outside of the turret, but found it full of men
hesitating but desiring to make the perilous
passage of the deck.

I found a rope hanging from one of the awning
stanchions over my head and slid down it to the
deck. A huge wave passed over me tearing me

from my footing and bearing me along with it, rolling, tumbling, and tossing like the merest speck.

I was carried as near as I could judge ten or twelve yards from the vessel when I came to the surface and the back-set of the wave threw me against the vessel's side near one of the iron stanchions which supported the life line; this I grasped with all the energy of desperation and drawing myself on deck worked my way along the life line and was hauled into the boat, into which the men were jumping one by one as they could venture across the deck.²⁴⁵

Truskitt remembered his dash for life across the iron deck and the leap for the boat.

I caught the boat upon the gunwale, and managed to pull myself in, but it was a close call.²⁴⁶

Keeler never forgot the scene from the stoved-in launch as he tried to help his shipmates, as bruised as he was, into the boat.

It was a scene well calculated to appall the boldest heart. Mountains of water were rushing across our decks and foaming along our sides; the small boats were pitching against our sides, mere playthings on the billows; the howling of the tempest, the roar and dash of water; the hoarse orders through the speaking trumpets of the officers; the response of the men; the shouts of encouragement and words of caution

"the bubbling cry

Of some strong swimmer in his agony"
and the whole scene lit up by the ghastly glare of the blue lights burning on our consort, formed a panorama of horror which time can never efface from my memory.²⁴⁷

Some of the sailors who had been ordered to the top of the turret to get in the boats clung in terror to the stanchions at the sight before them.²⁴⁸

Below, Butts and the other men kept steadily bailing,

only those leaving, and in the order named, whom the Captain bade save themselves ceased working.²⁴⁹

They descended from the turret to the deck with mingled fear and hope, for the waves tore from side to side, and the coolest head and bravest heart could not guaranty safety. Some were washed over as they left the turret, and, with a vain clutch at the iron deck, a wild throwing up of the arms, went down, their death cry ringing in the ears of their companions.²⁵⁰

The boat sometimes held her place by the Monitor, then was dashed hopelessly out of reach, rising and falling on the waves. A sailor would spring from the deck to reach her, be seen for a moment in mid-air, and then, as she rose, fall into her.²⁵¹

. . . she gradually filled; but some poor souls who sought to reach her failed even as they touched her receding sides, and went down.²⁵²

Not all that sacrificed were of the Monitor. Some were of the Rhode Island who had answered the call of those in peril on the sea.²⁵³

Acting Master's Mate Stevens, who, when the launch was manning, went quietly into the boat, took one of the oars, and, while alongside the Monitor, on striving to save others, was himself washed from the boat.²⁵⁴

Also, there were instances where sailors gave their lives to give shipmates another breath of life, especially one so young.

We had on board a little messenger-boy, the special charge of one of the sailors, and the pet of all; he must inevitably have been lost, but for the care of his adopted father, who, holding him firmly in his arms, escaped as by miracle, being washed overboard, and succeeded in placing him safely in the boat.²⁵⁵

Only to be swept himself from the deck by the next wave.

The last one to make the desperate venture was the surgeon; he leaped from the deck, and at the very

instant saw the boat being swept away by the merciless sea. Making one final effort, he threw his body forward as he fell, striking across the boat's side so violently, it was thought some of his ribs must be broken.²⁵⁶

"Haul the Doctor in!" shouted Lieutenant Greene, perhaps remembering how, a little time back, he himself, almost gone down in the unknown sea, had been hauled in by a rope flung him by the doctor.²⁵⁷

Stout sailor-arms pulled him in, one more sprang to a place in her, and the boat, now full pushed off - in a sinking condition, it is true, but still bearing hope with her, for she was wood.²⁵⁸

We were soon loaded and shoved off, but our dangers were not yet over. We were in a leaky, overloaded boat, through whose crushed sides the water was rushing in streams and had nearly a half a mile to row over the storm tossed sea before we could reach the Rhode Island.²⁵⁹

Over the waves we toiled slowly, pulling for life. The men stuffed pea-jackets into the holes in her side, and bailed incessantly.²⁶⁰

The launch was returning from the Monitor after its near miss with disaster and was terribly over-laden with frightened, exhausted sailors. The first cutter was just beginning its mission of mercy when again apparently unavoidable calamity struck.

They approached each other, and there seemingly no chance of preventing a collision, when Dr. G. M. Weeks, of the Monitor and Ensign Taylor of the Rhode Island and one of the sailors, sprang to the side to part them. The force of the blow was thus broken and the boats saved from destruction. The right hand of Dr. Weeks was caught between the boats, crushing the bones of three of his fingers so seriously that amputation was afterward found necessary.²⁶¹

We neared the Rhode Island but now a new peril appeared. Right down upon our center, borne by

the might of rushing water, came the whale-boat sent to rescue others from the iron-clad.²⁶²

We barely floated; if she struck us with her bows full on, we must go to the bottom. One sprang, and, as she neared, with out-stretched arms, met and turned her course.²⁶³

She passed against us, and his hand, caught between the two, was crushed, and the arm, wrenched from its socket, fell a helpless weight at his side; but life remained. We were saved, and an arm was a small price to pay for life.²⁶⁴

About this time on board the Rhode Island the paddle wheel had been freed by the persistent hacking of the axe by a volunteer in the paddle box and she steamed ahead some distance.²⁶⁵

Finally the launch approached to within hailing distance of the Rhode Island and she stopped her engines to recover the boat and the exhausted crews at approximately 12:15 A.M.²⁶⁶

. . . after a hard long struggle . . . we found ourselves under the weather quarter of our consort in imminent danger of being swamped as she sunk in the hollow of the sea. The ends of ropes, which the more active of our number seized and climbed up; others grasped them firmly and were thus drawn over the side.²⁶⁷

Keeler recalls his rescue.

In my exhausted state and with my crippled hand I could do neither of these, but watching my opportunity till I saw a loop, or what a sailor would call a bight of a rope, let down, I passed it under my arms and was drawn on board the Rhode Island to receive the congratulations and hospitalities of her officers, and I assure you they were not deficient in either.²⁶⁸

Surgeon Weeks had a considerable more difficult time of it.

We reached the Rhode Island; ropes were flung over her side, and caught with a death-grip. Some lost their hold, were washed away, and again dragged in by the boat's crew. What chance had one whose right arm hung a dead weight, when strong men with their two hands went down before him? He caught at a rope, found it impossible to save himself alone, and then for the first time said, — "I am injured; can anyone aid me?" Ensign Taylor, at the risk of his own life, brought the rope around his (the Surgeon's) shoulder in such a way it could not slip, and he was drawn up in safety.²⁶⁹

Once on board "the heartiest and most tender reception was made. Our drenched clothing was replaced by warm and dry garments, and all on board vied with each other in acts of kindness."²⁷⁰ All were rejoicing to be alive, but still concerned for their shipmates on board the sinking ironclad. Many watched from the rail as the red lantern swung drunkenly in the distance, disappearing a hundred times behind a wave, some thinking she had gone down only to reappear again.²⁷¹

Surgeon Weeks was immediately attended to.

The only one who had received any injury, Surgeon Weeks, was carefully attended to, the dislocated arm set, and the crushed fingers amputated by the gentlest and most considerate of surgeons, Dr. Weber of the Rhode Island.²⁷²

Back on board the Monitor, the last snorts of steam had reached the pumps and they slowly stopped.²⁷³ The great iron monster had exhaled its last breath of life. Now it would be only minutes before the final plunge would be taken and she would be committed to the deep. Then all would be over.

The engineer and his devoted crew were still manning the space, incapable of any word or action. The look in some of

their eyes told Mr. Watters that they were anxious for their own safety.

I reported the circumstances to Captain Bankhead. A few minutes later I received an order to leave the engine room and proceed to get in the boats.²⁷⁴

Joe Watters was the last to leave. He checked to be sure the space was clear and before stepping through the engine room door turned to take one last look and glance at his watch. It was between 12 midnight and 1 A.M.²⁷⁵ Those who remained were still trying to bail, hoping to buy a little time. When Watters reached the top of the turret he saw the whale-boat approaching and for the first time the raging sea that had delved the death blow to his ship. He heard the Captain say,

It is madness to remain here longer; let each man save himself.²⁷⁶

From the 1st cutter, Master's Mate Browne gave his account.

After a severe pull, we neared the Monitor and then the danger of our boat being thrown upon her deck and stove, confronted us. But my men were cool and obeyed every order promptly.

Once we did go over the Monitor bodily, and how we escaped wreck is more than I can tell. As the men came down from the Monitor's turret, holding by the life line, they were hauled into the boat. Some that were washed overboard from the deck of the Monitor, we picked up and some we were unable to save.

It was a pitiable sight to see them vainly struggling amid the foam, and not be able to save them.

One strange incident happened: We picked up near our boat, Master's Mate Stevens belonging to the

Rhode Island. It was a great mystery to me how he could possibly have gotten there, but I learned later that he had volunteered to go in the Launch and pull an oar, and by some way had been washed overboard from her and thrown by the sea onto the deck of the Monitor and from her washed overboard again and almost miraculously picked up by one of my boat's crew. We got him down in the stern sheets of my boat. But he seemed dazed and I had to hold him down with my foot.²⁷⁷

As soon as the boat was full, Browne shoved off for the Rhode Island over the howling sea.

Back on the Rhode Island, Ensign Taylor was still struggling with the Launch as before being damaged it was the largest and most seaworthy of all the boats. But the best seamen could not have taken her back to the Monitor for she was too badly broken up.

Started with her a second time, but she became unmanageable, being half full of water and was forced to return.²⁷⁸

They abandoned the attempt and Commander Trenchard put Ensign Rodgers in charge of a third boat, the Scorpion, "to assist the others in getting the crew on board."²⁷⁹

Ensign Rodgers described his journey.

At this time commenced my own personal adventures.

The Launch had been crushed and the 1st Cutter had taken off safely one boat load, and was on its way back to the Monitor on her second trip, when I was ordered to take charge of another boat and started for the sinking vessel. She was not a large one like the cutter and launch, and pulled only four oars.

I got clear of the ship, and started for the Monitor, which lay quite a distance to the windward of us. The sea was running quite high, and

it seemed at times as if our boat would end over.²⁸⁰

Meanwhile, still on board the Monitor were about twenty-five or thirty men on board.²⁸¹ The vessel was now filling rapidly and sensing that the final moments were near, Commander Bankhead ordered all who remained to get into the approaching boats.

By this time, finding the vessel filling rapidly, and the deck on a level with the water, I ordered all the men left on board to leave the turret and endeavor to get into the two boats which were then approaching us.²⁸²

The Captain then left the top of the turret to go below to his cabin for the last time.

For a moment he descended to the cabin for a coat, and his faithful servant followed to secure a jewel-box, containing the accumulated treasure of years. A sad, sorry sight it was. In the heavy air the lamps burned dimly, and the water, waist-deep, splashed sullenly against the ward-room's sides. One lingering look, and he left the Monitor's cabin forever.²⁸³

Time was precious; he hastened to the deck, where in the midst of a terrible sea, Lieutenant Greene nobly held his post.²⁸⁴

The 1st Cutter was already alongside the sinking iron-clad, trying to load its human cargo.

. . . the sea was breaking upon our now submerged deck with great violence, washing several men over-board. . . .²⁸⁵

Slowly, the four oared Scorpion was approaching with Ensign Rodgers at the helm.

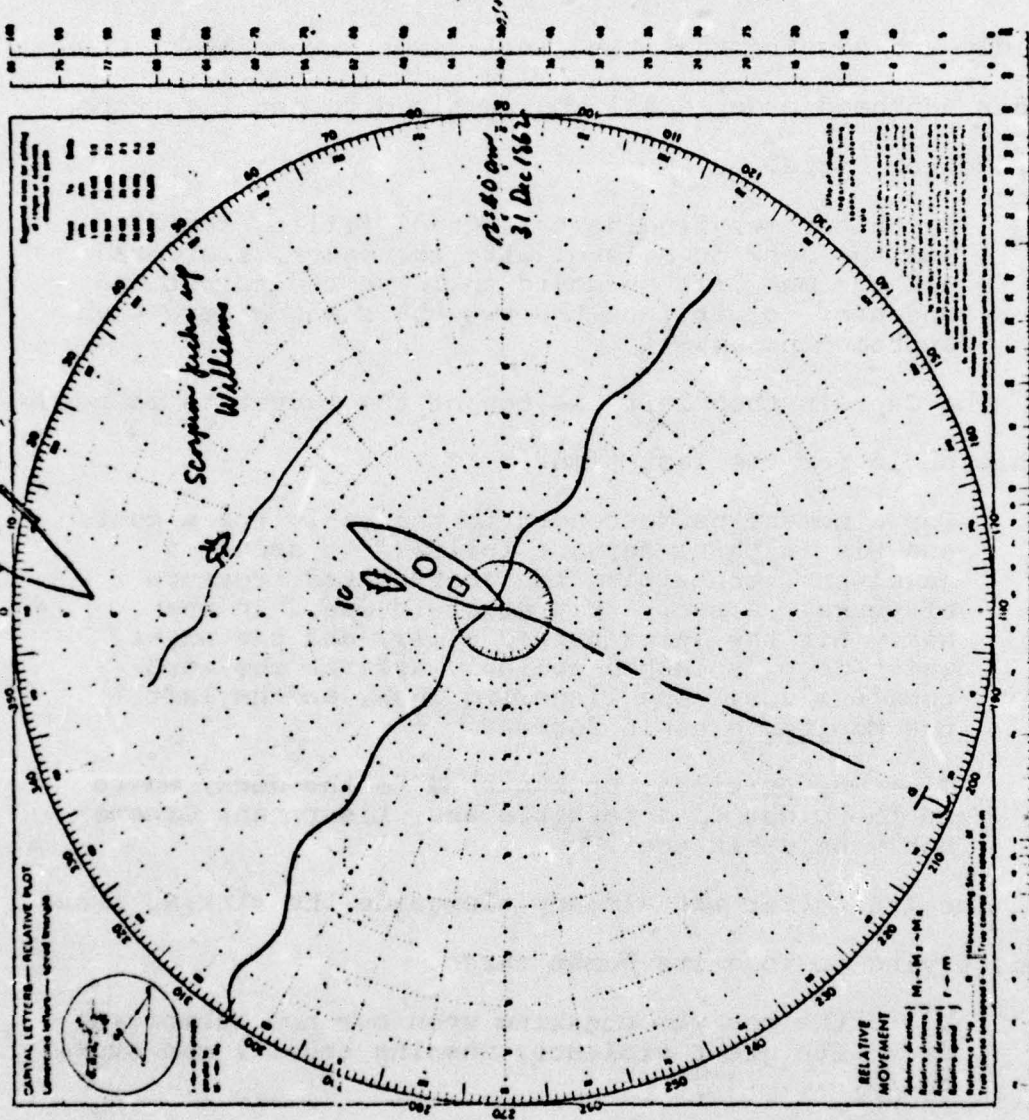
As we neared the Monitor my attention was called by one of the men at the oars, to a cry which he said he heard at some distance and right abeam of us. I changed our course, but in so doing so got into the

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trough of the sea and came near getting swamped; soon however, I had the satisfaction of seeing a man's head on the crest of a wave. We pulled up and got him into the boat more dead than alive. He proved to be a Master's Mate Williams, and he had been washed overboard from the sinking vessel. As soon as we got him into the boat, I started again for the Monitor.

I pulled up under her lee but did not dare go close alongside. Had I done so we would have been swamped.²⁸⁶

The appearance of the iron-clad at this time was truly appalling. She lay in the trough of the sea, and the waves were making a complete breach over her decks. She looked just like a half-tide ledge in rough water, and for the most of the time her turret only was visible.²⁸⁷

When the boats came alongside of the Monitor, her captain and executive officer went upon the deck and, clinging to the life-lines with the waves washing over them, called to the crew to come down from the turret and get into the boats, which they were reluctant to do at first.²⁸⁸

In this perilous position, Commander Bankhead held a boat's painter until as many men could get in as the boat could carry.²⁸⁹

He seized the rope from the whale-boat, wound it about an iron stanchion, and then his wrists, for days afterward swollen and useless from the strain.²⁹⁰

His body-servant stood near him.

"Can you swim, William?" he asked.

"No," replied the man.

"Then keep by me, and I'll save you."²⁹¹

One by one, watching their time between waves, the men filled in, the captain helping the poor black to a place.²⁹²

Some were able to jump into the boats, and some landed in the water and were hauled in. Seeing an old quarter-master with a large bundle under his arm, the executive officer, thinking that it was his clothes-bag, told him that that was no time to be trying to save his effects. He said

nothing, but threw it into the boat. When the bundle was passed up over the side of the Rhode Island it proved to be a little messenger-boy; probably the smallest and youngest one in the service.²⁹³

The Scorpion pushed off first.

After getting seven of them I was obliged to leave the others on the sinking craft to their fate, as there were now thirteen of us in my already overloaded boat.²⁹⁴

Meanwhile, Butts was still in the turret.

As I raised my last bucket to the upper hatchway no one was there to take it. I scrambled up the ladder and found that we below had been deserted. I shouted to those on the berth-deck, "Come up; the officers have left the ship, and a boat is alongside."

As I reached the top of the turret I saw a boat made fast on the weather quarter filled with men. Three others were standing on deck trying to get on board. One man was floating leeward, shouting in vain for help; another, who hurriedly passed me and jumped down from the turret, was swept off by a breaking wave and never rose.

I was then about twenty feet from the other men, whom I found to be the captain and one seaman; the other had been washed overboard and was now struggling in the water. The men in the boat were pushing back on their oars to keep the boat from being washed on to the Monitor's deck, so that the boat had to be hauled in by the painter about ten or twelve feet.

I secured the painter of one of the boats, (which by use of the oars, was prevented from striking the side,) and made as many get into her as she would safely hold in the heavy sea that was running.²⁹⁵

Francis Butts would be one of the last sailors to abandon the sinking ironclad.

Rodney Browne recalled those last tense moments filled with anxiety because his boat was sorely overloaded and that

he was forced to leave the Monitor with still some of the crew on board.

We had now got in my boat all of the "Monitor's" crew that could be persuaded to come down from the turret for they had seen some of their shipmates (who had left the turret for the deck) washed overboard and sink in their sight.²⁹⁶

Perhaps they felt that a like fate would be their own especially if they could not swim. The last to leave the "Monitor" was her noble Captain, J.P. Bankhead, Lieut. Green, and several other officers but the last to leave (although severely hurt) was the Captain.²⁹⁷

But not until after being told by a devoted sailor that he wasn't going to leave until his Captain did.

Richard Anjier, Quartermaster . . . remained at his post at the wheel . . . and when told by me to get into the boat replied, "No, sir; not till you go."²⁹⁸

Seeing the Captain get in the boat, Butts made his dash for life, after Anjier, and followed by Joice.

Now or lost, and in less time than I can explain it, exerting my strength beyond imagination, I hauled in the boat, sprang, caught on the gunwale, was pulled into the boat with a boathook in the hands of one of the men, and took my seat with one of the oarsmen.

The other man, named Thomas Joice, managed to get into the boat in some way, I cannot tell how, and he was the last man saved from that ill-fated ship.²⁹⁹

Commander Bankhead later wrote how he felt about leaving some of the men behind.

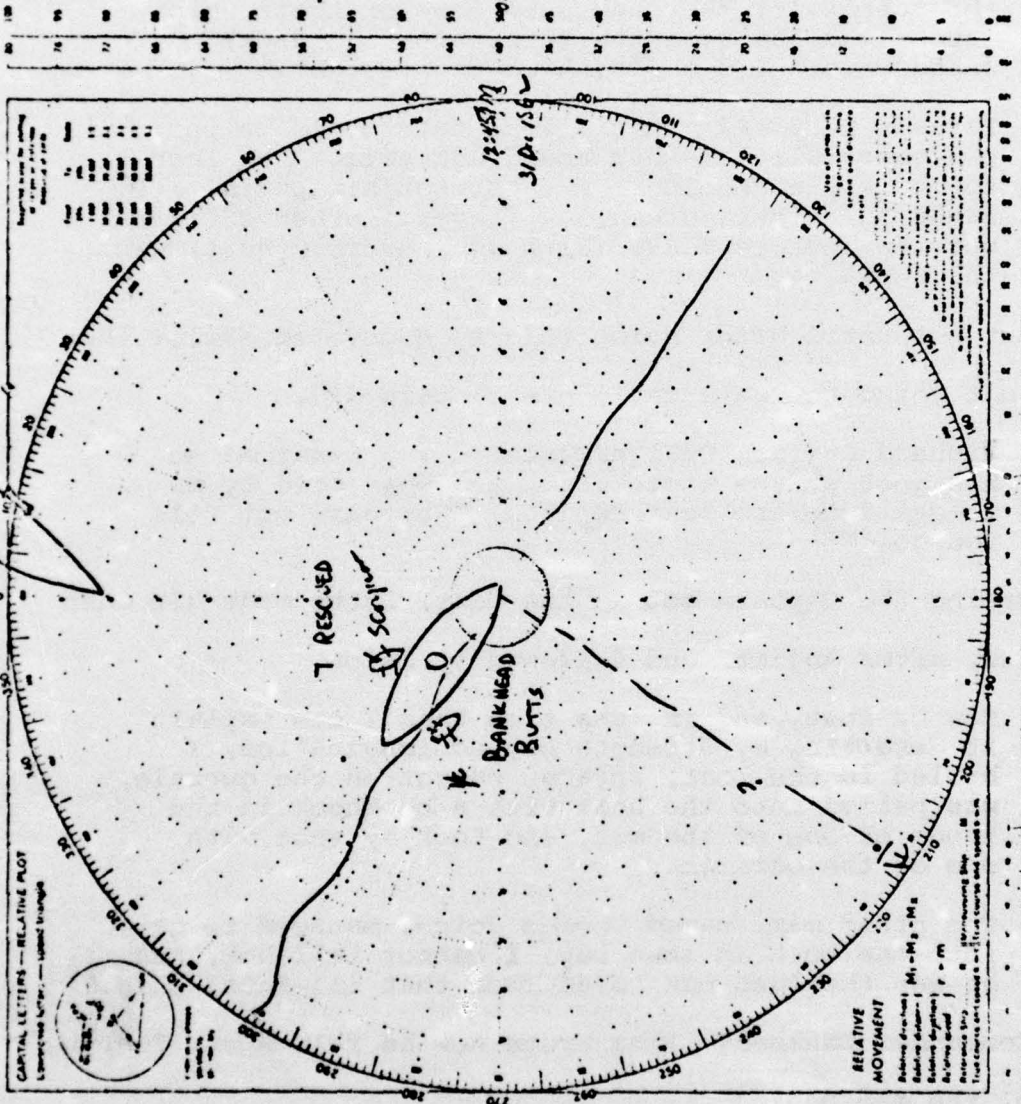
Feeling that I had done everything in my power to save the vessel and crew, I jumped into the already deeply-laden boat and left the Monitor, whose heavy sluggish motion gave evidence that she could float but a short time longer.³⁰⁰

Some men left in the turret, terrified by the peril, declined to come down.³⁰¹

H.O. 2655-10

SCALES
2 1 2 1

MANEUVERING BOARD



TIME	DISTANCE IN MILES	DISTANCE IN FATHOMS	SPEED IN KNOTS	SPEED IN MILES PER HOUR
12:45 PM				
1:00 PM				
1:15 PM				
1:30 PM				
1:45 PM				
2:00 PM				
2:15 PM				
2:30 PM				
2:45 PM				
3:00 PM				
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10:00 PM				
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10:30 PM				
10:45 PM				
11:00 PM				
11:15 PM				
11:30 PM				
11:45 PM				
12:00 AM				

Two or three still remained clinging to the turret; the captain had begged them to come down, but, paralyzed with fear, they sat immovable, and the gallant Brown, promising to return for them, pushed off.³⁰²

After taking all that would come, Browne, and the last boat to leave the Monitor started for the Rhode Island.

My boat was overloaded, for such a sea, but my noble crew were cool, steady and prompt to respond to every order and to them belongs the greater share of our success. I have never seen a worse sea for boats. As we neared the Rhode Island and as she rose to a sea, we could see her keel from her stem post to almost amidships.³⁰³

Butts recalled this nightmare and his narrow escape with death.

After a fearful and dangerous passage over the frantic seas, we reached the Rhode Island, which still had the tow-line caught in her wheel and had drifted perhaps two miles to leeward.

We came alongside under the lee bows, where the first boat, that had left the Monitor nearly an hour before, had just discharged its men; but we found that getting on board the Rhode Island was a harder task than getting from the Monitor.

We were carried by the sea from stem to stern, for to have made fast would have been fatal; the boat was bounding against the ship's sides; sometimes it was below the wheel, and then, on the summit of a huge wave, far above the decks; then the two boats would crash together.

Lines were thrown to us from the deck of the Rhode Island, which were of no assistance, for not one of us could climb a small rope; and besides, the men who threw them would immediately let go their holds, in their excitement, to throw another—which I found to be the case when I kept hauling in rope instead of climbing.

It must be understood that two vessels lying side by-side, when there is any motion to the sea, move alternately; or, in other words, one is constantly passing the other up or down.

At one time, when our boat was near the bows of the steamer, we would rise upon the sea until we could touch her rail; then in an instant, by a very rapid descent, we could touch her keel.

While we were thus rising and falling upon the sea, I caught a rope, and, rising with the boat, managed to reach within a foot or two of the rail, when a man, if there had been one, could easily have hauled me on board.

But they had all followed after the boat, which at that instant was washed astern, and I hung dangling in the air over the bow of the Rhode Island, with Ensign Norman Atwater hanging to the cat-head, three or four feet from me, like myself, with both hands clinching a rope and shouting for some one to save him.

Our hands grew painful and all the time weaker, until I saw his strength give way.

He slipped a foot, caught again, and with his last prayer, "O God!" I saw him fall and sink, to rise no more.

The ship rolled, and rose upon the sea, sometimes with her keel out of water, so that I was hanging thirty feet above the sea, and with the fate in view that had befallen our much-beloved companion, which no one had witnessed but myself.

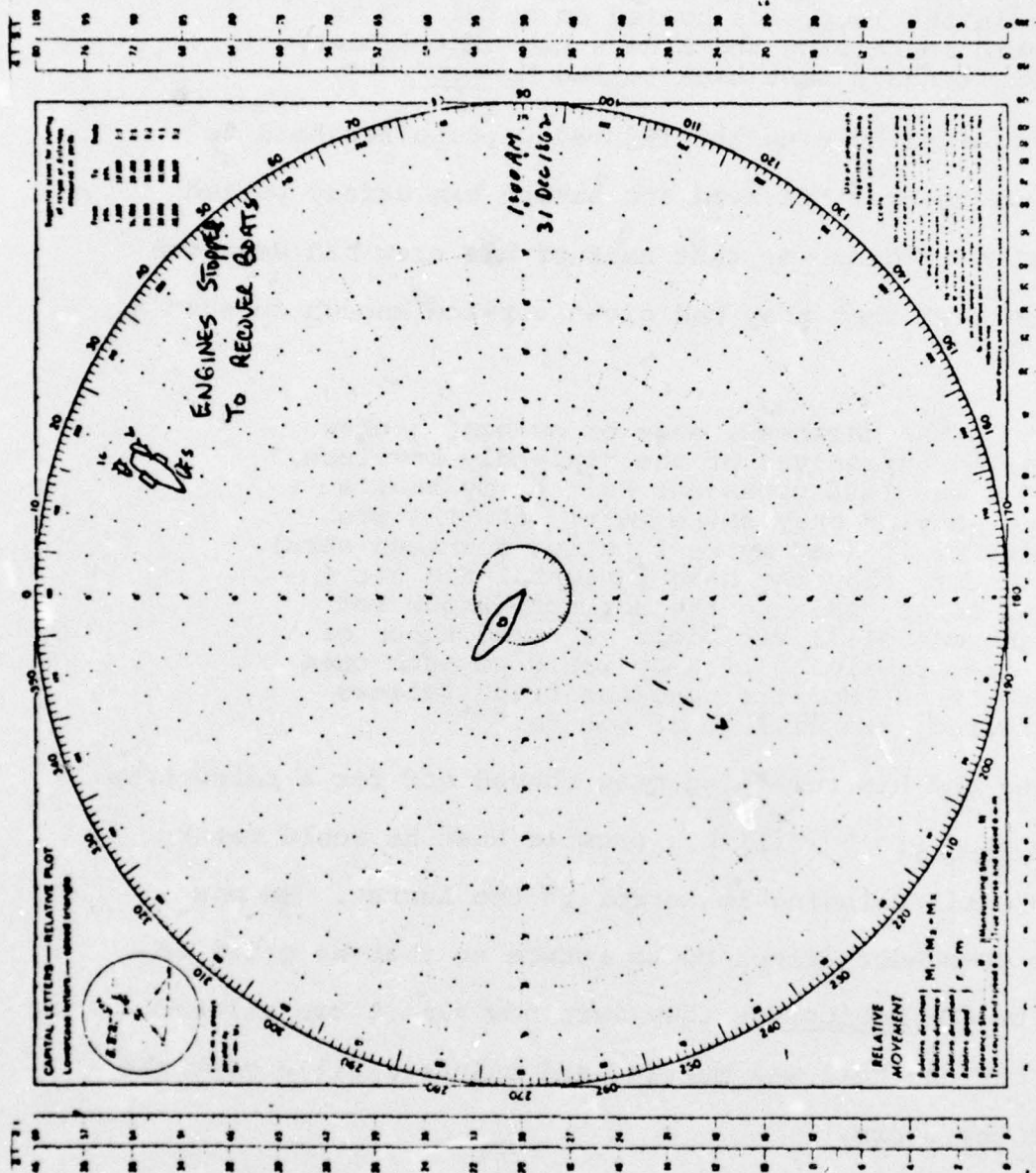
I still clung to the rope with aching hands, calling in vain for help. But I could not be heard, for the wind shrieked far above my voice.

My heart here, for the only time in my life, gave up hope, and home and friends were most tenderly thought of.

While I was in this state, within a few seconds of giving up, the sea rolled forward, bringing with it the boat, and when I would have fallen into the sea, it was there.

I can only recollect hearing an old sailor say, as I fell into the bottom of the boat, "Where in _____ did he come from?"

When I became aware of what was going on, no one had succeeded in getting out of the boat, which



then lay just forward of the wheel-house. Our captain ordered them to throw bow-lines, which was immediately done.

The second one I caught, and, placing myself within the loop, was hauled on board. I assisted in helping the others out of the boat, when it again went back to the Monitor.³⁰⁴

Browne after helping the injured Captain Bankhead to place a bowline over his head and seeing him safely pulled aboard turned to discover that half of his crew had deserted him, having felt that they had given service enough on such a night.

But in the darkness, some of my boat's crew availed themselves of the "friendly bowlines," and I was left minus one half of my boat's crew (having only seven left) before I was aware of it (and my boat pulled fourteen oars). No doubt, they may have thought I did not intend to go again to the Monitor (whose red light was still visible). I asked those of my crew remaining if they would go back once more to the Monitor? and the brave fellows answered, "We will go if you do."³⁰⁵

Browne and his remaining crew shoved off for a third trip to the Monitor, to fulfill his promise that he would return for those still clinging in terror to the turret. He was hailed by Commander Trenchard to return so that he could be towed up to the Monitor as they were now almost two miles to leeward, but the hail was muffled and unintelligible over the sounds of the storm.

. . . Mr. Browne started on another trip and soon afterwards was hailed, and directed to lie on his oars, or drop astern and be towed up, as the Rhode Island would steam for the Monitor as soon as the men could be got on board from the boats alongside, and the boats hoisted up.³⁰⁶

Mr. Brown, perhaps not understanding the order, proceeded on in the direction of the Monitor. . . .³⁰⁷

. . . upon leaving the Rhode Island he saw the red light burning at the flag-staff of the Monitor, apparently about one mile distant.³⁰⁸

As the wind and sea were against him he made but little progress, yet he continued gaining until with a quarter of a mile of the Monitor, when the light became extinguished. . . .³⁰⁹

Browne described the scene as they desperately pulled to reach the Monitor.

Exhausted as they were and with seven oars short, we made but slow progress and before we reached her, her light disappeared.³¹⁰

When he approached what he supposed to be the position of the vessel, he could perceive no other trace of her except an eddy, apparently produced by the sinking of the vessel.³¹¹

At approximately 0130, 31 December 1862, the Monitor sank.³¹² The restless sea had finally prevailed. There was no great noise to signalize the end of the struggle, no terrific explosions or final convulsions—just silence and the sounds of the eternal sea. The Monitor was now history—her deeds recorded, her grave unmarked.

He remained near that position as long as he deemed prudent, in order to rescue any of the crew that might be on the water, but found none.

We pulled around, as near as we could estimate, the place where we supposed she had sunk but no sign of any one could we find although one of my crew was positive he heard some one call.³¹³

Meanwhile, on board the Rhode Island the drenched sailors, from the Monitor and Rhode Island alike were receiving a hearty welcome.

[illegible]

1st center abscises ~ 2000 cm
red, at . . . 31 Dec 1
Position of Monitor

10TH ED., JULY 1961 H.O. 2665-10

2000

Per Page of 20
H.O. 2105-10

Here the heartiest and most tender reception met us. Our drenched clothing was replaced by warm and dry garments, and all on board vied with each other in acts of kindness.³¹⁴

Surgeon Weeks, who was in the launch, remembers peering into the darkness over the rail of the Rhode Island.

For an hour or more we watched from the deck of the Rhode Island the lonely light upon the Monitor's turret—a hundred times we thought it gone forever, a hundred times it reappeared.³¹⁵

All on board the steamer were anxiously watching the light in the turret and vainly peering into the darkness for a glimpse of the rescuing boat, the light suddenly disappeared and forever, for after watching for a long time to try and find it again, they were forced to the conclusion that the Monitor had gone to the bottom with all that remained on board.³¹⁶

But what of the last boat and Master's Mate Browne? Ensign Rodgers recalls thinking that they both must have been lost.

Soon after I got on board the ship, we lost sight of the lights of the sinking ship and the first cutter, and I fear that they both went down together.³¹⁷

Surgeon Weeks remembered the same moment, all were concerned with the fate of the 1st Cutter.

We had looked, most anxiously, for the whale-boat which had last gone out, under the command of Master's Mate Brown, but saw no signs of it. We knew it had reached the Monitor, but whether swamped by the waves, or drawn in as the Monitor went down, we could not tell.³¹⁸

However, those in the 1st Cutter knew they were still afloat and realized that even in their exhausted state, their survival depended upon the strength in their arms. But soon

it seemed hopeless as the distance between the steamer and the whale boat began to open.

. . . we started for the Rhode Island, but before long we found that she was steaming away from us, throwing up rockets and burning blue lights,—leaving us behind.³¹⁹

Apparently, the misfortune of the night before was still stalking the 1st Cutter, the sea waiting; anxious to claim still more as its own.

It was a gloomy outlook and, exhausted as we were, we were compelled to give her up. And now, all that we could do was to keep our boat afloat all that weary night, hoping daylight would show us some hope of rescue.

Cold, wet, hungry, tired, lame and sore, the hands of my crew blistered and bleeding. My right foot being lashed to the floor of the boat, my leg had chafed against the seat until it had cut into the flesh deeply. I carry the scar to this day— it looks like a deep burn, larger than my hand.

My wrist cut, and bone displaced by accident in unhooking the boat's tackle was swollen and pained me intensely. The steering oar which I carried under my left arm hugged close to my body, had rasped up and down so that I was bruised and bleeding from my hip to my arm pit and a large gland in the latter place was so swollen that after our rescue it had to be lanced. Yet not a word of complaint or fear was heard from my noble boys, but a look of brave determination was on every face.

We knew we were drifting to sea, several knots an hour. We had no sail, compass, or provisions and could only judge by the drift in what direction we were going. It was the longest night I ever passed.

There was no rest, for the seas were so irregular and tumbling in from every direction, a constant watch had to be kept and oars ready

to meet some ugly sea, head and head. . . .³²⁰

The weather showed little promise of moderating. The wind was still howling out of the southwest and was now force seven, approximately 30 knots.³²¹ The rain had stopped and dark luminous storm clouds raced through the sky. The sea was scattered with white caps and wind blown foam still restricted visibility. All eyes strained, in hopes of seeing some sign of the lost boat and her little crew.³²²

The Rhode Island hoisted up the Scorpion and the launch and proceeded to windward in search of the 1st Cutter and the Monitor.

The steamer proceeded slowly in the direction in which the Monitor bore when last seen, and endeavored to keep her position as near as possible throughout the night, burning Coston's night signals at intervals.³²³

It was an eerie scene, with the blue light of the rockets casting shadows into the gloom every half hour.³²⁴ But there was no sign of the whale boat. Commander Trenchard gave orders to keep as "near the position as possible until daylight" in hopes of finding the 1st Cutter.³²⁵

Browne saw from the 1st Cutter the second and third coston light that the Rhode Island burned but the distance was opening.³²⁶

Finally they lost sight of the lights as the swift Gulf Stream swept them further out to sea. His crew exhausted, their hands blistered and bleeding, Browne knew that they must fight the current to survive, for if they were swept too

far out to sea, beyond the sea lanes, they would have little chance of rescue. Browne, an experienced officer, knew what Commander Trenchard would decide and while his crew kept watch for the signals from the Rhode Island, he kept them pulling into the current.

He made a drag of the boat's mast, by which he kept her head to sea, and the crew on the lookout for signals. As no more could be seen he then pulled for the northward and eastward, finding the sea to be too rough to pull directly to the west, hoping to fall in with some of the numerous coasting vessels.³²⁷

He kept the crew pulling all night in order to overcome the great strength of the northeast current; considering that if they did not exert themselves to do so they would be out of the track of all vessels.³²⁸

Slowly, the hours passed and the sky began to get light, and with the light came renewed hope in the hearts of Browne and his crew.³²⁹

Commander Trenchard wrote in his report

After daylight, not seeing anything of the missing boat, I decided to cruise between the position she had separated from us and Cape Hatteras and the extremity of its shoals with the hope of falling in with her.³³⁰

Captain Trenchard would not leave the spot, but sailed about, looking in vain for the missing boat, till late Wednesday afternoon, when it would have been given up as hopelessly lost, except for the captain's dependence on the coolness and skill of its tried officer.³³¹

In the early light of dawn, Browne spotted a "small black boat some distance off, with two or three men in her; seeing her as she rose three times upon the waves, and then disappearing."³³² Perhaps this was the india rubber life boat (See Note 1 on following page) from the Monitor that those left on board had broken out or perhaps a boat from another sinking left unrecorded in history. We will never know as at this time Browne was very much taken up with the management of his own boat, the sea being very irregular and coming from all quarters.³³³

At about 7 A.M. Master's Mate Browne sighted a full rigged ship approaching. Their hopes soared. The story of this adventure is best related in Browne's own words from a letter to his children. (See Note 2 on following page)

About 7 A.M. we made a full rigged ship and knew she would pass near us if she held her present course. She came nearer and I could plainly see the officer on her quarter-deck smoking a cigar. He went to the cabin companionway and another officer came on deck. He leveled his spy glass at us, looked aloft and went below leaving us to our fate.³³⁴

With no other ship in sight, their hopes of survival dwindled. How cruel can the human heart be to leave those men adrift on a rough sea. If they had only known what the whale-boat crew had gone through the previous night trying to save others in peril. Browne would not concede to the sea as long as he had strength and could match his wits against the elements.

NOTE 1: This india rubber life boat was mentioned in the original specifications of the Monitor dated September 16, 1861 in Record Group 45, Box 34 AD File, Design and General Characteristics, U. S. National Archives.

"As it is incompatible with the service for which the battery is designed to carry boats, none will be permanently carried. . . . A skeleton frame of metal will be furnished by the contractor with an India rubber covering which may be put together in case of need, suitable light seats and oars to be furnished."

NOTE 2: This letter was written "solely for my children to be given them at my death. They have as yet not seen it."

See the following letter to President Taft. Found in the Monitor folder of the ZC file, Division of Naval History, Washington Navy Yard, Washington, D. C.

Oakland, Calif., November 29, 1909

Pres. Wm. Taft
Washington, D. C.

Honorable Sir:-

The enclosed is a copy of "(Sequel)" to the story of the loss of the "Monitor" which Col. Roosevelt, while President, asked me to write for him as it gives details additional to those contained in the Official Records of the Navy, Series 1, Vol. 8, (Page 356).

Yours respectfully,

(Signed) D. Rodney Browne,
Formerly Act'g Master, U.S.N.

13th Ave., Cor. 25th St.,
Oakland, Calif.

She was running the blockade, carrying all the sail she could stand, with preventers back stays leading abaft. Her decks were piled with bales of cotton. She knew that a boat in that place must be in distress but cotton was of more value than human lives.

I knew we were out of the usual track of vessels but hoped for the best. Several hours after this, we made a schooner to the leeward, and saw we had some chance to cut her off.

We found several overcoats in our boat (left there by some of the officers we had rescued on our previous trips).

We stranded our boat's painter, tied the coats together at the button holes with rope yarns and made quite a sail. Then we took an oar for a mast, one strand of the painter for a backstay. We then run the oar through the armholes of the coats. The other two strands of the painter we used as braces.

As my wrist was by this time so swollen and painful we rigged an oar on each quarter of the boat and two of my crew did the steering. So with the wind free and plenty of it we went booming on our course to cut off the schooner.

One of my crew had taken his black silk neck handkerchief and tied it to a boat stretcher and fastened it to our mast head for a flag.

I felt assured if we did not get on board this vessel, we might stand a poor chance for our lives.

I told my crew what I believed to be the fact: that we were at least fifty miles from land with no water or provisions, a gale of wind, a heavy sea, and a strong current against us and this schooner, perhaps our last show.

One of my crew said, "Well, if they won't take us, we will take them, or try for it." So on we stood for her.

On nearer approach we made out the Captain on the quarter deck with a musket and on nearer view we saw her crew (five men) armed with bricks, (of which her cargo was composed).

When we got within hail, down went gun and bricks and they stood ready to assist us. It was our black flag and uniform that had aroused their belligerent attitude. For our flag was the "Pirates flag."

We had to board her on the weather side and as we swung alongside, while on the top of a wave, we jumped from the boat on to her deck and the next sea threw our boat (which you will remember was fourteen oared one) over the schooner's rail and across her main hatches, staving in our boat's bottom.

But we were on deck and glad enough to be there. She proved to be the schooner, "A. Colby" of Bucksport, Me., loaded with brick for the U. S. Government and bound for Fernandina, Fla.

I briefly told the Captain our experiences and how Cape Hatteras light bore according to my judgement, (in which he placed but little faith), he seemed to think he was farther South, but I told him that with close reefed sails and a strong current on his starboard bow, he had made almost as much Easting as Southing.

He said, "I am chartered by the Government and as you are a Navy Officer I will shape my course for Hatteras if you so order me."

Later we made Cape Hatteras lighthouse, as I expected we would, but Captain insisted it must be Cape Lookout and stood in nearer to the land and went below to look at his chart.

All at once we struck on a shoal, I ordered the helm hard a starboard and jumped into the main rigging so as to look down on the water and saw by its greenness that we were on a small shoal.

We struck three times, answered the helm, went off or over it, and cleared another shoal that had still less water on it. We then sounded the pumps and found we were making water very fast and at once shaped our course for Hatteras Inlet.

All hands at the pumps. The Captain had some Cherry brandy on board and he served it out to the men when they went to the pumps, and it served to stimulate them and had no ill effects.

My crew would not let me help at the pumps as my wrist was so swollen although their hands were sore and bleeding. So I bathed my wrist in the brandy and Captain Harriman swathed it up.

We feared that the wind might fall and leave us on a lee shore and with a cargo of brick, a bad leak, (and we knew not how bad) it was not a very cheerful situation. (See Note on following page)

I shall never forget his words at the time: "Mr. Browne," said he, "I own the most of this vessel and it is all I have got in the world, but even in our present situation, I do not regret having picked you up, for human life is worth more than money. He was a different man than the Captain of the blockade runner, - he thought his cotton of more value.

When we got nearer to the land, we discovered a vessel laying inside the bar. We came to an anchor and lowered the schooner's boat and I and her crew pulled in.

We found it was the U. S. Str. "Miami," Capt. Townsend. He sent off a boat and fifteen men to keep us afloat as we knew not the extent of our damage.

We passed a very comfortable night, as the "Miami's" crew would not let us do any work, so we went below for the sleep we so much needed. The next day the "Miami" came out and towed us to Beaufort.

The sea began to moderate and with this extra help of fresh men we had but little difficulty in keeping the leak under.

Upon arriving at Beaufort, I took the schooner's boat and went on board the flag ship. I was shown into the Commanding Officer's cabin and found him engaged with some Army Officers.³³⁵

NOTE: This version of the same events is found in the Official Records as part of the report submitted by Commander Trenchard of the Rhode Island and is inserted at this time for a comparison.

>1030 (after making schooner)

He got up the crew's coats for sails and peaking his oars to assist, ran down for her.

~1100 (after rigging sail)

and about eleven o'clock managed to get alongside. The schooner proved to be the A. Colby, commanded by H. D. Harriman of Bucksport, Me. bound for Fernandina, with bricks for government use. Mr. Browne and his crew were received with every kindness and attention and the boat taken on board.

~1100 (after coming alongside)

The cutter was taken aboard the schooner, and Mr. Harriman was requested to change course so far as to land the officer and men at Beaufort, N. C.

This he consented to do.

>1100 (after changing course for Beaufort)

but in running in for the coast, with a view of ascertaining more correctly his position having been without an observation for several days his schooner struck on Diamond Shoals off Cape Hatteras.

>1100 (after striking Diamond Shoals)

Being laden with brick which strained the vessel dangerously every time she struck bottom, it was feared that the A. Colby would soon go to pieces. As it was, she began to leak dangerously.

>1100 (after she began leaking)

Mr. Harriman managed to get her afloat.

>1100 (after getting afloat off Diamond Shoals)

and, continuing on his course for Beaufort.

After a time he looked up and seeing me said, "Well, what can I do for you, Young Man?" I replied, "I am the officer in command of the boat lost from the Str. "Rhode Island," off Hatteras and have the honor to report to you for orders, and to turn over my boat's crew."

He jumped up and taking me by both hands (I wish he had let the lame one alone) shook them until I thought he would shake them off.

Turning to the other officers, introduced me, saying, "Gentlemen, this is good news, I have three Steamers out looking for this officer and crew."

He refused to take my boat's crew and said, "Go aboard any vessel here and get any thing you need. You need not be afraid of your men leaving you after what they have been through with you."

He sent for my boat, and had it repaired and a sail and a mast fitted. He then said, "Go ashore and have a good time until the "Rhode Island" comes in."

My crew did have a good time, fishing, hunting, etc. and after I had my hand attended to and the gland under my arm lanced, I enjoyed it also.

And now for Captain Harriman. At Beaufort his vessel was temporarily repaired and sent to Fernandina with her cargo of brick.

She was then ordered to Philadelphia for repairs. There, they put her in complete repair, even to coppering her (she had never been coppered before).

Gave her new sails and rigging (giving the old sails and rigging to Capt. Harriman as a present), and he got a charter from the Government as long as the war lasted, so he was much better off than if he had not rescued us.³³⁶

On board the Rhode Island, they were still steaming to the south of Cape Hatteras Shoals. The Quartermaster recorded in

the log at 9 A.M. 31 December that the wind shifted around to the North northwest and had decreased to an intensity of force six with the sky still overcast.³³⁷ At 9:45, 31 December, Commander Trenchard "mustered the crew saved from the Monitor in all 47 men and officers."

On mustering the officers and crew, four officers and twelve of the crew were missing. Those who escaped did so without receiving any serious injury with the exception of our surgeon, whose fingers on one hand were so badly mashed by being caught between the boats as to render partial amputation necessary.³³⁸

At 1 P.M. the Rhode Island hailed the steamer Kennebec with troops from Hampton Roads, did not learn anything of our boat.³³⁹

They continued to search.

At 2 P.M. signaled the U. S. Steamer Columbia and was boarded by the Commander of her, who

reported having experienced a heavy gale from the S.W.³⁴⁰

The two Commanders spoke about the events of the preceding night for an hour and then the Rhode Island continued on its search for the remainder of the day.³⁴¹

On 1 January, the first day of the new year which the Monitor had so gallantly struggled to see, the Rhode Island questioned two commercial schooners, the J. D McCarthy and the Shark both of New York but neither had sighted the lost boat.³⁴² That afternoon, the Rhode Island abandoned the search and steamed for Beaufort to deliver some dispatches and to report

the loss of the Monitor.³⁴³

Upon arrival, Browne described the reunion with his Captain.

Several days later the Steamer "Rhode Island" was signaled (outside the bar), I manned my boat and sailed out to her. As we neared her, glasses were leveled on us and when they made out who we were, everybody was on deck and as we came alongside we were received with hearty cheers.

Capt. Trenchard met me at the gangway and throwing his arms around me gave me a good hug. This was the only time, during the time I served under his command, that he ever forgot his dignity. They all thought we were in Davy Jones' locker.

I found our Paymaster had sent my accounts to Washington, as discharged by death, and it was some time before I was reinstated again and then I was prompted for gallantry.³⁴⁴

With the dispatches delivered and her lost crewmen finally aboard, the Rhode Island with the survivors of the Monitor, set course for Fortress Monroe at Hampton Roads, Virginia.

Two days' sail brought us to the fort, whence we had started on Monday with so many glowing hopes, and alas! with some who were never to return. The same kindness met us here as on the Rhode Island; loans of money, clothing, and other necessities, were offered us. It was almost well to have suffered, so much of a beautiful feeling did it bring out.³⁴⁵

Once in port Commander Bankhead and Commander Trenchard ate dinner with Acting Rear-Admiral S. P. Lee, commander of the Blockading Squadron³⁴⁶ after having sent this telegram to the Secretary of the Navy.

TELEGRAM - Hampton Roads, Jan. 3, 1863 - 9 P.M.
Received at Washington 9:30 P.M.

The Monitor in tow of the Rhode Island, passed Hatteras Shoals Tuesday afternoon, the weather fine and promising; about 9 P.M., squally weather, and about half past 10 it blew hard, and at 1:30 A.M. on Wednesday 31st, the Monitor, having sprung a leak, went down.³⁴⁷

The surviving crew of the Monitor was back from whence they started, only a nightmare lay between 29 December 1862 and 1 January 1863 for them. Eventually they would receive new assignments to new ships, but all would remember their service on the famous little "Cheesebox on a raft" that had so helped the Union cause. They once called themselves and will forever be known in history as "The Monitor Boys." (See Note)

They, though having been defeated, were proud to have served on her.

A day or two at the fort, waiting for official permission to return to our homes, and we were on our way,—the week seeming, as we looked back upon it, like some wild dream.³⁴⁸

One thing only appeared real: our little vessel was lost, and we, who in months gone by, had learned to love her, felt a strange pang go through us as we remembered that never more might we tread her deck, or gather in her little cabin at evening.³⁴⁹

NOTE: In a letter to the hospitalized Lt. Worden after the Virginia engagement, the crew sent a letter of praise to him signing it "The Monitor Boys"

We had left her behind us, one more treasure added to the priceless store which the Ocean so jealously hides.³⁵⁰

The Cumberland and Congress went first; the little boat that avenged their loss has followed; in both noble souls have gone down.³⁵¹

Their names are for history; and so long as we remain a people, so long will the work of the Monitor be remembered, and her story told to our children's children.³⁵²

The Monitor is no more. What the fire of the enemy failed to do, the elements have accomplished.³⁵³

Her work is now over. She lies a hundred fathoms deep under the stormy waters off Cape Hatteras. But "the little cheesebox on a raft" has made herself a name which will not soon be forgotten by the American people.³⁵⁴

APPENDIX I

The following is an excerpt from "The Building of the Monitor" by John Ericsson from Battles and Leaders. Ericsson discusses the claim of a "separation" between the upper and lower hull of the Monitor and his designed seal under the turret.

A flat, broad ring of bronze is let into the deck, its upper face being very smooth in order to form a water-tight joint with the base of the turret without the employment of any elastic packing, a peculiar feature of the turrets of the monitors, as will be seen further on. Unfortunately, before the Monitor left New York for Hampton Roads, it was suggested at the Navy Yard to insert a plaited hemp rope between the base of the turret and the bronze ring, for the purpose of making the joint perfectly water-tight. As might have been supposed, the rough and uneven hemp rope did not form a perfect joint, hence during the passage a great leak was observed at intervals as the sea washed over the decks. "The water came down under the turret like a waterfall," says Lieutenant Greene in his report. It will be proper to observe in this place that the "foundering" of the Monitor on its way to Charleston was not caused by the "separation of the upper and lower part of the hull," as was imagined by persons who possessed no knowledge of the method adopted by the builders in joining the upper and lower hulls, Again, those who asserted

that the plates had been torn asunder at the junction of the hulls did not consider that severe strain cannot take place in a structure nearly submerged. The easy motion at sea, peculiar to the monitors, was pointed out by several of their commanders. Lieutenant Greene in his report to the Secretary of the Navy, dated on board the Monitor, March 27th, 1862, says with reference to sea-going qualities:

During her passage from New York her roll was very easy and slow and not at all deep. She pitched very little and with no strain whatever.

Captain John Rodgers's report to the Secretary of the Navy, dated on board of the monitor Weehawken, January 22d, 1863, refers specially to the easy motion of his vessel:

On Tuesday night, when off Chincoteague shoals, we had a very heavy gale from the E.N.E. with a very heavy sea, made confused and dangerous by the proximity of the land. The waves I measured after the sea abated; I found them twenty-three feet high. They were certainly seven feet higher in the midst of the storm. During the heaviest of the gale I stood upon the turret and admired the behavior of the vessel. She rose and fell to the waves, and I concluded that the monitor form had great sea-going qualities. If leaks were prevented no hurricane could injure her.

The true cause of the foundering of the Monitor was minutely explained to the writer some time after the occurrence by the engineer, a very intelligent person, who operated the centrifugal pumping-engine of the vessel at the time. According to his statement, oakum was packed under the base of the turret before going to sea, in order to make sure of a water-tight joint; but this expedient failed altogether,

the sea gradually washing out the oakum in those places where it had been loosely packed, thereby permitting so large a quantity of water to enter under the turret, fully sixty-three feet in circumference, that the centrifugal pumping-engine had not sufficient power to expel it. The hull consequently filled gradually and settled, until at the expiration of about four hours the Monitor went to the bottom. It will be asked, in view of the preceding explanation of the construction of the monitor turrets, namely that the smooth base of the turret forms a water-tight joint with the ring on the deck, why was oakum packed under the turret before going to Charleston? The commander of the vessel, Captain Bankhead, in his report of the foundering, adverts to the admission of water under the turret, but does not duly consider the serious character of the leak, sixty-three feet in length. Captain Bankhead evidently had not carefully investigated the matter when he attributed the accident to an imaginary separation of the upper and lower hull. (See Note on the following page) It should be observed, in justice to this officer, that having commanded the Monitor only during a brief period he possessed but an imperfect knowledge of his vessel, and probably knew nothing regarding the consequence of employing packing,—namely, that it might cause "water to come down under the turret like a waterfall," as previously reported by the second officer in command. It is proper to mention as a mitigating circumstance in favor of the second officer,

Lieutenant Greene, that previous to the battle in Hampton Roads he had "never performed any but midshipman duty." The important question, therefore, must remain unanswered, whether in the hands of an older and more experienced executive officer the Monitor, like the other vessels of her type, might not have reached Charleston in safety.

NOTE: Captain J. P. Bankhead says in his report:

Found (in the morning) that the packing of oakum under and around the base had loosened somewhat from the working of the tower as the vessel pitched and rolled . . . towards evening the swell somewhat decreased, the bilge-pumps being found amply sufficient to keep her clear of the water that penetrated through the sight-hole of the pilot-house, hawse-hole, and base of tower (all of which had been well calked previous to leaving). At 7:30 the wind hauled more to the south . . . Found the vessel towed badly, yawing very much, and with the increased motion making somewhat more water around the base of the tower . . . 8 P.M.; the sea about this time commenced to rise very rapidly, causing the vessel to plunge heavily, completely submerging the pilot-house, and washing over and into the turret, and at times into the blower-pipes. Observed that when she rose to the swell, the flat under-surface of the projecting armor would come down with great force, causing a considerable shock to the vessel and turret, thereby loosening still more the packing around its base. . . . I am firmly of the opinion that the Monitor must have sprung a leak somewhere in the forward part, where the hull joins on to the armor, and that it was caused by the heavy shocks received as she came down upon the sea.

EDITORS.

APPENDIX II

Taken from The "Monitor" Iron Clads

Boston 1864

The problem which fell to the lot of the Navy Department to solve at the beginning of the war, was to neutralize the aggressive power of the monster iron-clads foreign powers were producing. By the adoption of one of two methods only, could this have been accomplished. First, by constructing broadside vessels of the same power of battery, impregnability and speed, with consequently the same immense proportions and draft of water—in other words, to copy the English and French craft; for, of course, to cope with them, their natural antagonists, they must at least be their equals in the points above enumerated, and these could not be attained with smaller proportions. A type of iron-clad so erroneous in principle, that even their great advocate, SCOTT RUSSELL, admits that in order to attain impregnability with the other essential qualities, they must have from 12,000 to 20,000 tons displacement.

The cost of the Warrior, Bellerophon, &c., is about \$2,000,000 in gold, and with the high price of labor and material with us, this species of vessel would have cost from five to six millions each, or much more than the cost of the whole fleet of monitors of the Passaic class, to say nothing of the time it would have taken to build them—from two to three years at least. So then it is clear, that if this description of iron-clad had been decided upon, it would have been almost impossible, in the first place, to have had them

built; and furthermore, it is difficult to conceive of a greater waste of public money, than to have commenced ships of a class useless to us for general naval purposes, and from their great draft of water, incapable of blockading or operating against the rebel ports in any way. In fact, if the Britons had presented us, two years ago, with their whole fleet of colossal iron-clads, of what possible use would they have been? They could scarcely approach within sight of our coast from Cape Henry down; and if kept in commission, would have taken a whole army of sailors to man them, to say nothing of their other expenses. The only thing which could have been done with them, provided we had a navy yard with sufficient depth of water, would have been to have placed them in ordinary.

The second method open to the department was to adopt the system of ERICSSON, as the only one upon which iron-clads of small size, light draft of water, impregnability and the power to use the heaviest ordnance, (as well as quickness of construction,) could be built. These vessels could be used against the rebels, as well as to protect our large harbors from foreign iron-clads, should that emergency arise. It requires but little ability to copy, and military science should seek rather to counteract than to blindly imitate. Would it have been wise in this case to have copied the English and French? It must be admitted we would have been in a sorry

plight indeed, if the Government had imitated our trans-Atlantic neighbors. How different is the case now! It would be destruction to broadside-ships to bring them against harbors defended by small turret vessels; while the larger ones, from their greater speed, would render it impossible for them to escape.

The method adopted by several writers, of describing the original Monitor, as consisting of an upper and lower vessel, in order as they supposed to make the form and model of construction more clearly understood, popularly, has been productive of very general misapprehension on the subject.

No such distinction as upper and lower vessel exists in reality; and this method of description has caused the idea that these vessels are composed of two separate vessels joined together, the junction of which being a weak point liable to be ruptured by the force of the sea, to be quite generally entertained, even in quarters where more accurate information might have been expected.

Before the armor, viz.: wooden backing and iron, is applied to the hull of a Monitor, there is in fact but little difference between it and the hull of an ordinary vessel, constructed either of wood or iron, as the case may be, except that it is somewhat stronger.

In the case of the small Monitors of the Passaic class, the difference is, that at the bow the hull is projected from

about four feet below the water line to a line with the deck, far enough to receive a circular well of plate iron, within which the anchor is hoisted by means of a simple windlass within the vessel. The object of this simple arrangement is to completely protect the anchor together with its cable and windlass. It is of course unnecessary to add, that consequently the operations of lowering and raising the anchor, are thoroughly protected from the enemy's fire; indeed the enemy has no means of ascertaining whether or no the iron-clad is at anchor. At the stern a similar projection is extended over the propeller and rudder thereby completely protecting these important parts. These overhangs, as they are termed, are as much a portion of the hull as the sides or bottom, and they are made sufficiently strong to resist the action of any force to which they may be subjected. It is not a matter of surprise that these features in the Monitor hull should be viewed with apprehension by those unaccustomed to contemplate innovations in any form, but ample experience has conclusively proved their fears to have been groundless. A little reflection must render it plain that the water cannot act with near as much force on these submerged extremities, as it does on the overhanging paddle-boxes of an ordinary ocean steamer, placed as they are above the surface of the water.

Against this, no doubt, the loss of the original Monitor and the Weehawken will be urged.

With respect to the former, the writer states that after a careful examination of all the evidence in this case as well as extended conversation with many who were on the vessel—both officers and men—at the time of the disaster, he is clearly of opinion that the accumulation of water in the vessel was not caused by a rupture of the hull, but that it leaked in from other sources; we need not search far to find them; the quantity which entered from under the turret and through the hawse-hole alone, will go far to explain the cause of the leak. This vessel foundered gradually, from a gradual accumulation of water, which would not have been the case if the leak had been caused by the rupture of the overhang.

It may be asked, why was not this water ejected by the auxiliary steam pumps, those attached to the motive engines and the large centrifugal pump. It is known that for a considerable time before she went down, there was barely sufficient steam pressure to keep the motive engines in operation, consequently the bilge injection attached to them could have been of but little use; the same may be said of the auxiliary pumps, and as to the centrifugal pump the writer knows that it required a pressure considerably above the maximum working pressure to even balance the column of water in the discharge pipe, so it is clearly impossible that this pump could have thrown a drop of water; the engines attached to it were insufficient. The joint which the turret formed with the deck was exceedingly

imperfect, much inconvenience was experienced by it on the voyage from New York to Hampton Roads, from the quantity of water which leaked through at this junction. This defect, however, was foreseen, but the very short time occupied in the construction of this vessel did not permit of a more perfect arrangement; it was corrected in those which followed the original. The stern overhang in this case was also large, which was rendered necessary from the fact that the lines of the hull were so bluff as to require the propeller to be carried considerable distance from it, the overhang, of course, extending in proportion. In those which followed, more attention was given to model, and not only was this overhanging portion of the hull reduced about one half, but it was constructed in a very much stronger and more careful manner; this part of the hull of the Dictator, though not very large, is constructed so strongly that it is hardly too much to say, that the vessel could be raised out of water by a force applied to the end aft.

On one occasion it was officially reported that the after portion of the hull which extends over the screw and rudder of one of the Passaic class, after she had encountered a succession of heavy weather, was seriously ruptured. The vessel afterwards returned to New York from Charleston where she was docked and critically examined, the hull was found to be the same as when launched, no evidence of weakness or

straining could be discovered. It will be proper to add in this connection, that this portion of the hull of this Monitor, from an oversight of the builder was only about one half as strong as the others of her class.

As to the sinking of the Weehawken, it is sufficient to state, that no one familiar with the construction of these vessels, entertained for a moment the idea that the water entered from a rupture of the hull—leaving off the forward hatch while the sea was submerging the deck, is a satisfactory explanation of this disaster.

This is the same Monitor, it will be remembered, which successfully passed through one of the heaviest gales which visit our coast.

For a description of her performance under these circumstances, the reader is referred to Commodore Rodger's report.

In those Monitors in which the anchor-well is not used, as in the Canonicus, Monadnock, and Dictator classes, the hull does not project at the bow, so it only differs from an ordinary hull, except in strength, by the stern projection.

It will not be out of place to mention the method of attaching the armor to the hull. First, a horizontal wrought iron plate is riveted perpendicular to the hull, at such a distance from the top of it as is called for by the depth of the proposed armor; this plate is stiffened at intervals by strong wrought iron projections also riveted to the hull. The intervals between these projections are then filled up with

blocks of oak securely fastened, without the employment of the objectionable French and English through bolts; no armor fastenings whatever pass through the hull. Long fore and aft beams of oak are then bolted to these blocks which together form the indispensable wooden backing. To these fore and aft beams the armor is attached. The armor is thus so arranged and attached as to impart immense longitudinal strength to the vessel. It will be observed that the armor thus described forms a projection which entirely surrounds the hull from a considerable distance below the water line to the top of the deck. This projection performs the almost indispensable part of keeping the vessel steady, for as Commodore Rodgers says,

She cannot roll with these wing-like projections holding up her sides.

Further on he adds,

The Monitor model rolls very little, and is extremely easy in a sea-way. In a gale of wind, it was found on board the Monitor Weehawken, that while her companion the wooden corvette Iriquois, (deemed a very perfect model,) had an extremely violent motion, so violent indeed that no one could stand on her decks without the assistance of life lines—the Weehawken had so little motion that a bottle of claret stood for an hour on its narrow base on the dinner table in the cabin before it was put away.

The advantage this great steadiness gives for good gunnery practice, will be readily appreciated.

From yesterday's papers we learn that the wooden Monitor

Monadnock has just arrived at Fortress Monroe, after encountering a gale of wind in which she performed admirably—as might have been expected. The sloop of war which was towing (?) her having signalled that she could keep up no longer, the Commander of the Monitor cut the tow-line and went on, followed by his consorts.

This subject has been spoken of at some length in order to show that the disasters which have befallen the Monitors do not impugn the soundness of Ericsson's system, in a greater degree than the loss of an ocean steamer impugns the safety of steam navigation.

The supposed liability of a vessel with (a tight) deck but relatively a short distance out of water, to disaster from assumed deficiency in surplus buoyancy, is clearly more apparent than real. The surplus buoyancy or spare flotative power of a vessel, so to speak, is of course measured by the solid contents of so much of the vessel above the water, which is practically water-tight. In other words, weight equal to the displacement of this solid must be added to sink the vessel. It matters not how this spare buoyancy is obtained, whether by a broad and narrow solid, but comparatively a short distance out of water, as the exposed surface of a Monitor, or by the relatively narrow and high sides of the broadside iron-clad, which it has been shown cannot be made impregnable, or even mount the heavy ordnance required to render the iron-clad invincible.

It will be proper to state, that the capacity of the exposed portion of a Monitor is rendered very great in proportion to the capacity of the hull itself, by the projecting armor, which thus performs the double duty of giving the necessary spare flotative power, and at the same time steadying the vessel. In short a few inches immersion of the water line of the Monitor model will balance as many feet in the bottom of the relatively narrow hull. Any spare flotative power possessed by a steamer above that which is necessary to permit the water which may leak in, to rise up and effectually extinguish the fires in the boiler furnaces,—thus nearly ending the means of pumping,—will serve to prolong her existence but a short time.

Who will state the exact height out of water which marks the limit of safety? Coasting vessels constantly make voyages with their decks nearly level with the water.

On this head, Commodore Rodgers remarks,

I do not consider the lowness of the Monitors in the water a source of unsafeness. They start to sea with sufficient buoyancy, and by the consumption of coal and provisions, they hourly grow lighter.

It has been truly said that the use of the steam engine in war vessels—the iron-clad—and modern artillery, to say nothing of other mechanical appliances which will hereafter probably be used in defensive naval warfare, have nearly annihilated the offensive power of France and England, as far as

we are concerned. The career of the Alabama, built, manned, and equipped in England, has shown what one swift, clean, copper-bottomed steamer can accomplish, and must also suggest the probable result with fifty Alabamas prowling the ocean. The power of steam as a war agent was never fully realized before. To neutralize the power of their fleets, is to disarm Naval Powers for aggression on this continent, and this, if not already accomplished, will be, thanks to the judgment of the Navy Department, before many months have passed.

The charge frequently brought against the Department that they would neither examine or tolerate any plans for iron-clads but those of ERICSSON, is without foundation. On the contrary, every design or model of an iron-clad sent to the Department, has been thoroughly examined and considered.

Among the plans passed and built upon, may be mentioned the Galena, which was pierced through and through by ordinary shot, driving fragments of the iron armor within the vessel, dealing death and destruction in every direction—the Keokuk, which was speedily penetrated and sunk by the enemy's fire; and the Ironsides, a strong and substantial vessel, although very efficient in many instances in driving the rebels from their guns, from the fact that she has been used in the sphere for which, from her number of guns, she was peculiarly adapted, could not exist many moments in combat with a Monitor.

I. N.

APPENDIX III

LIST OF THE OFFICERS AND CREW OF THE U.S.S. MONITOR ON BOARD AT TIME OF SINKING

Cdr. John Pine Bankhead, U.S.N.,	Commanding
Lieut. Samuel D. Greene, U.S.N.,	Executive Officer
Louis N. Stodder,	Master
John J. N. Webber,	Master
Grenville M. Weeks,	Assistant Surgeon
W. F. Keeler,	Paymaster
Watters,	First Assistant Engineer
R. W. Hands, <u>Lost</u>	Third Assistant Engineer
Daniel Toffey,	Captain's Clerk
Geo. Frederickson, <u>Lost</u>	Acting Ensign
Jesse M. Jones,	Hospital Steward
R. R. Hubbell,	Paymaster's Steward
Richard Anjier, At Wheel	Quarter-Master
Peter Williams,	Quarter-Master
Moses M. Stearns,	Quarter-Master
Derick Brinkman,	Carpenter's Mate
Robert Williams, <u>Lost</u>	First Class Fireman
John Driscoll,	First Class Fireman
Abran Fester,	First Class Fireman
Wm. Richardson,	First Class Fireman
George S. Geer,	First Class Fireman
Patrick Hannan,	First Class Fireman
Mathew Leonard,	First Class Fireman
Thomas Joyce, <u>Lost</u>	First Class Fireman
John Garrety,	First Class Fireman
Edmund Brown,	First Class Fireman
Joseph Crown,	Gunner's Mate
John Rooney,	Master at Arms
Thomas Carroll, 1st,	Captain of Hold
John P. Conkin,	Quarter Gunner
John Stocking, <u>Lost</u>	Boatswain's Mate
William Allen, <u>Lost</u>	Landsman
William Eagan, <u>Lost</u>	Landsman
William Bryan, <u>Lost</u>	Yeoman
Thomas Longhran,	Ship's Cook
Thomas Carroll, 2d,	First Class Boy
Charles F. Sylvester,	Seaman
Charles Peterson,	Seaman
Anton Basting,	Seaman
Hans Anderson,	Seaman
Peter Truskitt,	Seaman
Thomas B. Vial,	Seaman
William Marion,	Seaman
Anthony Connoly,	Seaman
James Fenwick, <u>Lost</u>	Seaman (Quarter Gunner)
Daniel Welch,	Seaman
Michael Mooney,	Coal Heaver
Norman Atwater, <u>Lost</u>	Acting Ensign
Samuel A. Lewis, <u>Lost</u>	Third Assistant Engineer

LIST OF THE OFFICERS AND CREW OF THE U.S.S. MONITOR
ON BOARD AT TIME OF SINKING

Daniel Moore, <u>Lost</u>	Officers' Steward
Robert Howard, <u>Lost</u>	Officers' Cook
Jacob Nickles, <u>Lost</u>	Ordinary Seaman
Ellis Roberts,	Coal Heaver
William Durst,	Coal Heaver
James Seery,	Coal Heaver
Robert Quinn,	Coal Heaver
John Mason,	Coal Heaver
Christy Price,	Coal Heaver
R. K. Hubbell,	Ship's Steward
Robert Cook, <u>Lost</u>	First Cabin Boy
George Littlefield, <u>Lost</u>	Coal Heaver
Francis B. Butts	Seaman

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202. Op. Cit., Butts
203. Op. Cit., Bankhead
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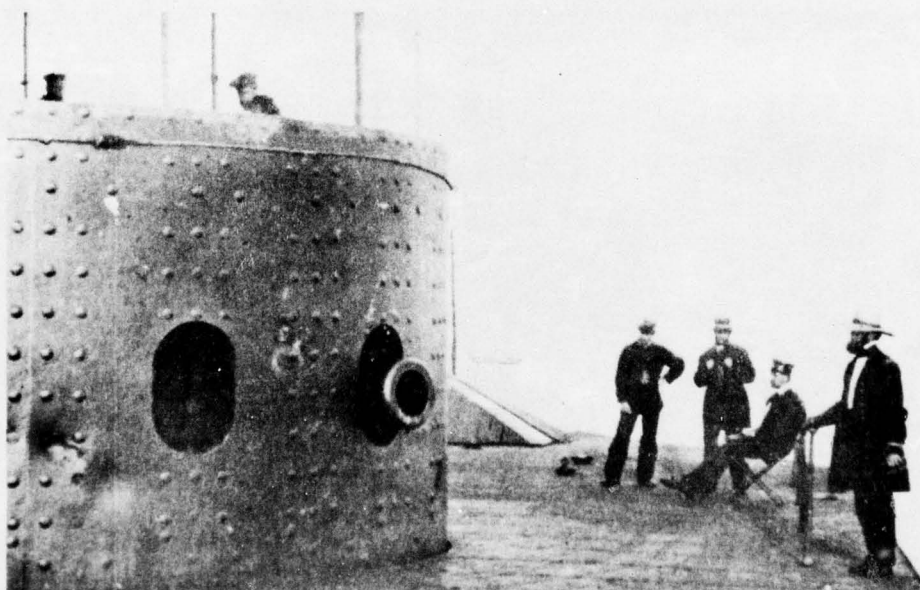
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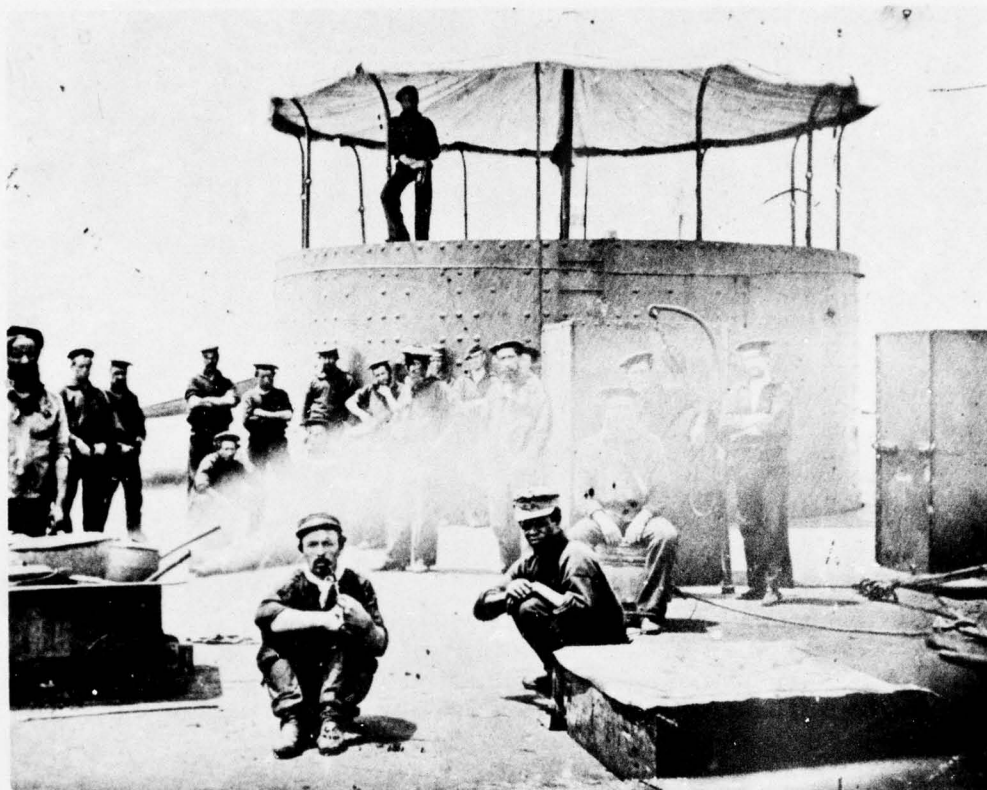
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- 348. Op. Cit., Weeks
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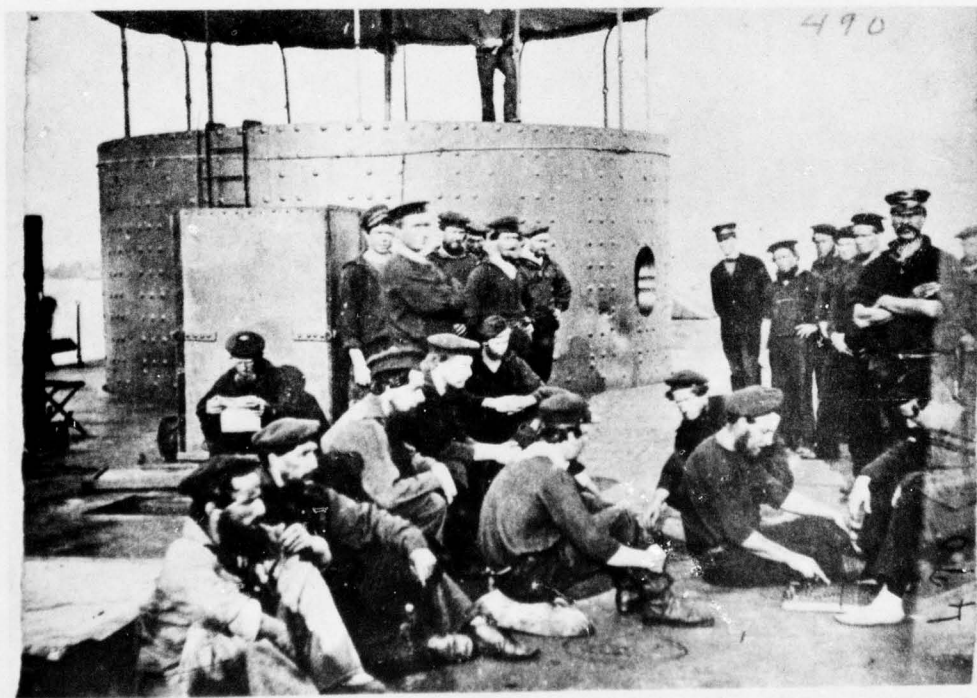
Officers aboard USS Monitor, in the James River, Va., 9 July 1862.
 (Top Row, L-R): Albert B. Campbell, 2nd Ass't Engineer; Mark Trueman Sunstrom, 3rd Ass't Engineer; William F. Keeler, Actg. Ass't Paymaster; L. Howard Newman, Lt., Executive Officer of USS Galena.
 (Middle Row, L-R): Louis N. Stodder, Actg. Master; George Frederickson, Master's Mate; William Flye, Actg. Vol. Lieutenant; Daniel C. Logue, Actg. Ass't Surgeon; Samuel Dana Greene, Lieutenant.
 (Bottom Row, L-R): Robinson W. Hands, 3rd Ass't Engineer; E. V. Gager, Actg. Master.



Deck Scene Photograph by James Gibson on the
 James River 9 July 1862
 The Officers are: (l-r) R. W. Hands, L. N. Stodder, A. B. Campbell, Wm. Flye
 Lib. of Congress



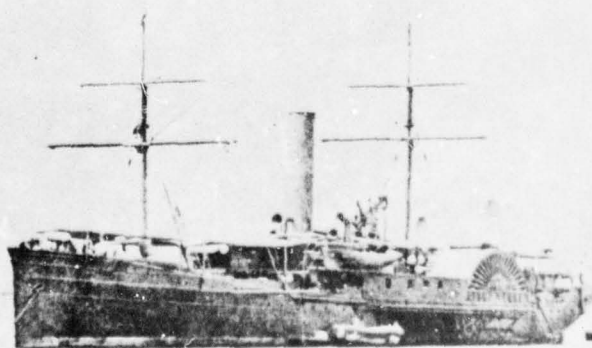
Crewmen cooking on deck of Monitor, James River, 1862.



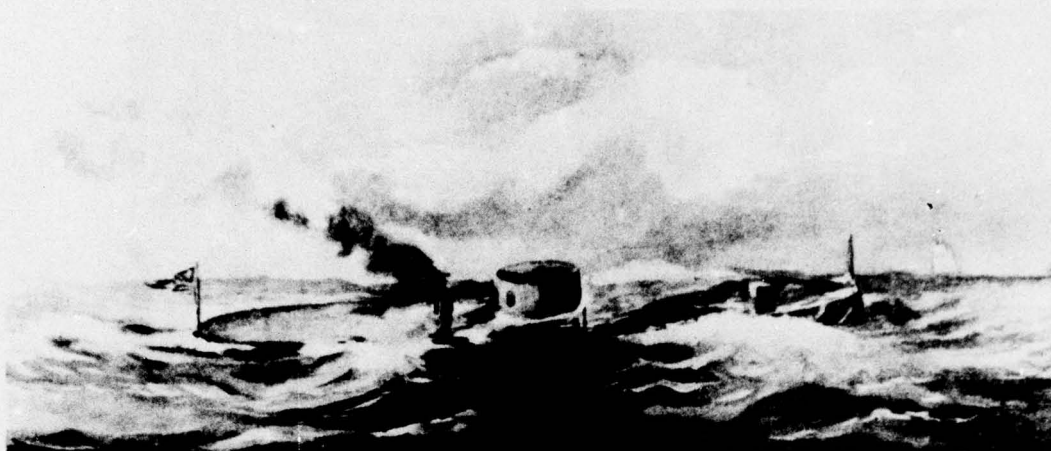
Crew assembled on deck of Monitor, July 1862.



Commander Steven Decatur Trenchard, Commanding Officer of the USS Rhode Island.



Towing ship, USS Rhode Island.



The artist concept of Monitor underway at sea.



The artist concept of Monitor sinking.
From "Deeds of Valor", Vol. II, p. 39,
The Perrien-Keydel Co., Detroit, 1907

Log of United States Steamer *Rhode Island* Commanded by Commander F. S. Frenchard.

H.	Knots.	Fathoms.	Current.	Wind.		Weather.	Temperature.		Barometer.	REMARKS ON THIS DAY OF December 1862
				Direction.	Force.		Air.	Water.		
A.M.										
1				N. N. E.	2	e	47		2977	Mentnight to 4 A.M. This & Morgan
2				.	.	.	46		.	
3				.	.	.	45		.	
4				.	.	.	44		2965	
5				.	.	.	46		2979	4 to 6 A.M.
6				At 7.30 U.S. Transport "Hobby" passed bound out.
7				N. W.	.	bc	.		2986	Sam'l H. Field 8 A.M. to meridian At 10 A.M. mistered all hands and held divine service.
8				.	.	bc	.		.	
9					3000	
10				
11				
12				
Distance per Log Latitude, D. R. Longitude, D. R. Latitude observed Longitude Current Variation										At anchor off Fort of Monroe
P.M.										
1										4 to 6 P.M.
2										Sam'l H. Field.
3										
4										6 to 8 P.M.
5				S. E. by E.	1	bc	53		3002	Varied battery for action.
6				Albert J. Taylor
7				
8					3017	8 P.M. to Meridian This & Morgan
9				.	.	.	47		.	
10				.	.	.	46		.	
11					3017	
12				

Expended 260 Galls water.
12 Sticks wood.

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Log of United States Steamer Rhode Island Commanded by Commander S. D. Brenchard.

H.	Knots.	Fathoms.	Current.	Wind.		Bar.	Therm.	Wind.
				Direction.	Force.			
1				S.W.	1	6	46	9015
2				
3				.	.	.	47	
4				
5				
6				.	.	.	50	
7				
8				9015
9				S.W.	.	.	50	
10				
11				
12				.	.	6	50	9016

Distance per Log
Latitude, D. R.
Longitude, D. R.
Latitude observed
Longitude
Current
Variation

At anchor off Fort Hope Maine

1				S.W.	1	6	50	9015
2				.	.	.	.
3				.	.	.	.	9011
4				.	.	.	.
5				.	.	.	.
6	5		S.W.	.	.	.	.
7	6		S.W.	.	2	.	50	
8	6		S.W.	.	.	.	.	9012
9	5		S.W.	.	.	.	50	
10	5		.	.	.	.	.	9011
11	6		S.W.	.	.	.	.
12	6		.	.	.	.	.

Expenses 275 fathoms water.
25 fathoms used

Drift of ship 14 ft 6 in forward
15.5 ft aft

REMARKS ON THIS 27th DAY OF December 1862
Monday

Midnight to 4 A.M.

Saml. F. Field

4 1/2 A.M.

Received on board two boats from
U.S. Steamer Monitor. At 5 last gunboat
"Galena" came down, and anchored

Albert Taylor

U.M. & Meridian

Carried men at the guns. At 10 A.M.
U.S. Steamer "Conestoga" and "Whiting" from
Monauk arrived. Took a hauler to the
Monitor.

Thos. & Meyer

Meridian to 4 P.M.

At 3:30 got underway and steamed
down the harbor. "Monitor" in tow in
charge of John W. Dean, Pilot.

Saml. F. Field

4 to 6 P.M.

At 4:45 discharged Pilot. At 5:40 Capt
Henry bore west distance 4 miles

Albert Taylor

6 to 8 P.M.

Thos. & Meyer

8 P.M. to Midnight.

At 7:30 sighted 2 sail, one standing
to the northward and eastward, the other
standing to the westward. At 10 rounded in
12 fathoms water. At 10 sighted sail standing
to the northward and eastward. At 10
rounded in 13 1/2 fathoms water

Saml. F. Field

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Harper's engraving of the sinking.

Log of United States Steamer "Thetis Island" Commanded by Commander S. J. Wenzel

H.	Knots.	Fathoms.	Current.	Wind.		Weather.	Temperature.		Barometer.	REMARKS ON THIS DAY OF DECEMBER 1862
				Direction.	Force.		Air.	Water.		
A.M.										
1										Midnight to 2 A.M.
2	2		S.W.	S.W.	7					Landed Troop, succeeded in getting the
3	2		"	"	"					crew off except 16 men and officers. sent 1 st
4	3		"	"	"			29.40		cutler in charge of Am. gun for them. at 130 lost
5	5		"	"	"	0	63			sight of the monitor light, we being unable to turn
6	5		S.W.	"	"			29.41		our wheels on account of the boats discharging the
7	5		"	"	"		64			crew of the monitor. hoisted up Troop and land
8	5		"	"	"		65	29.42		and proceeded to windward in search of the 1 st and
9	5		N.E.	N.E.	6					and Monitor, but not finding them. Steamed to
10	5		"	"	"					windward to hold our position until daylight,
11	5		"	"	"					burnt boats signals every half hour.
12	4		N.E.	"	"		50	29.44		
<p>Distance per Log 16 miles Latitude, D. R. 34. 56 Longitude, D. R. 76. 05. Latitude observed Longitude Current Variation</p>										<p>This 4th May 2 to 2 A.M. At 5. sounded with 30 fathoms of line and got no bottom 6 " 40 " " 7 " in 35 " water.</p> <p>Saml. H. Filler S. & Monitor.</p> <p>Steaming along the coast looking out for our boat. At 5.30 sounded in 25 fathoms. 9.45 sounded the crew drove from the Monitor in all 47 men and officers. sounded in 11 fathoms. At 10.40 sounded in 16 fathoms. At 12 made 6 or more light houses bearing N. by E. distant 10 miles.</p> <p>Alfred Taylor Monitor to 4.5 A.M.</p> <p>At 1.30 spoke the Steamer Monitor with troops from Hampton Roads. did not learn anything of our boat. At 1.45 observed light house boat No. 2</p>
P.M.										
1	5		S.W.	N.E.	6					
2	9		"	"	"			52		
3			"	"	"					
4	9		"	"	"					
5			"	"	"					
6	5		S.W.	"	4	6	61	30.09		
7	5		"	"	"					
8	10		"	"	5		50	30.16		
9	10		"	"	"					
10	10		"	"	"					
11	10		"	"	"		50			
12	10		"	"	"			30.20		

Cypress 25 ft. water
 20 sticks wood
 Names of Point Lutes crew missing
 Taking Mules Made J. Nelson Brown.
 John Jones, John L. Smith, Esq. Maurice Hagg Esq.
 Hugh Jones Esq. (1849). John O. Thelen, John M. Grinnell, George Perry.

1 PM to midnight.
No 10 sounded in 20 fathoms

Thos. V. Hagen

dist. Dumber. It designated the U.S. Steamer
Columbia and was directed by the Commandant
of it, who reported having experienced a heavy
gale from the S.W. at 2 P.M. on the 10th.

Thres. & Myon
5 to 63° N.
Oct 4. 30 Cape Cod. m. here 1 by W. died 12 miles.
Wounded in 12 fiddlorns.

6 to 8 P.M. Am. Field
* 7 M exchanged signals with US Steamer Columbia.

Libert, J., 60

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Log of United States *Whaler "Rhode Island"* Commanded by Commander A. D. Venebore.

H.	Knots.	Fathoms.	Course.	Wind.		Bar.	Therm.		Remarks on this
				Direction.	Force.		Air.	Water.	
1	10		S 7/8 W	N. E. W.	6	51	71	50.26	Midnight to 4 A.M.
2	10		.	.	.	.	.	.
3	10		.	.	5	50	.	50.27	
4	10		.	.	.	.	.	.
5	10		.	.	.	.	.	.
6	10		.	.	.	56	72	.	
7	10		S 7/8 W	.	6	.	.	.	
8	10		.	North	.	52	61	.	
9	10		West	.	.	.	.	50.40	
10	5		S 7/8 W	.	.	50	.	.	
11			N. E. W.	.	.	.	.	.
12			.	.	.	49	52	50.40	

Distance per Log 173 miles
Latitude, D. R. 39-28
Longitude, D. R. 75-14
Latitude observed 39-28
Longitude 75-14
Current
Variation 1-East

1			49 50	North	5	49	57	
2			.	.	.	.	.
3			.	.	.	.	.
4			.	.	.	.	.
5	5		S. S. W.	.	3	.	.	
6	10		South	.	.	.	.
7	10		.	.	.	.	.
8	10	5	East	N. E.	6	54	.	50.40
9	10	5	.	.	.	.	.
10	9	5	S 7/8 W	.	.	52	.	
11	9	5	.	.	.	61	50.34	

Expended 260 fathoms water
80 sticks wood.

Draft of ship 14 ft 2 in forward
14 " 4 " aft.

REMARKS ON THIS 1st DAY OF January 1879
Tuesday

Midnight to 4 A.M.
S. H. Field.
4 to 8 A.M.
At 5 A.M. sounded in 17 fathoms.
6 " " " 15 "
7 " " " 15 "
8 " " " 13 "
Spoke Schooner "D" bound for Port
Royal with government stores.

Albert Taylor,
S.A. M. to Meridian.
At 9 A.M. sounded in 16 fathoms. At 10 A.M.
Spoke Schooner "D" in company from New York
for Port Royal. boarded the Schooner Shark
from New York for Port Royal, 10 days out.
At 12. sounded in 12 fathoms. Schooner
confirmed for distance of 10 miles to be tried by a
summary Court. Master Thos. V. Meyer.

Meridian to 4 P.M.
At 4 P.M. came to anchor off Falls Head,
and went to 20 fathoms. Light house bearing
by S dist 4 miles.

S. H. Field
4 to 6 P.M.
At 4 P.M. got underway. at 4.45 stopped to deliver
letter to U.S. Gunboat "Chocoma". at 5 passed
at and at 5.15 stopped & transferred Pymatros

Capt. J. J. Gardner to U.S. Gunboat "Mordello"
At 5.30 proceeded on our course.

Albert Taylor,
6 to 8 P.M.
At 6 sounded in 16 fathoms.
Thos. V. Meyer
From 8 P.M. to midnight
At 8.45 paid a ship bound to the South-west and returned
At 9 sounded in 15 fathoms. 11 sounded in 16 fathoms.
12 " " 14 "
S. H. Field

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Log of United States Steamer "Albatross" Commanded by Commander S. J. Vanecko.

H.	Date.	Fathoms.	Course.	Wind.		Tide.	Therm.	Bar.	Remarks on this day of January 1863
				Direction.	Force.		A.	M.	
1	6		N by E. North	2	6	50	65		At midnight, 20-6 A.M.
2	6		"	"	"	"	"		At 2 A.M. sounded in 15 fathoms
3	6		"	"	"	"	"		" " " " " "
4	6		"	"	"	"	63	30.20	
5	6		"	"	3	"	"		At 5 A.M.
6	7		"	"	"	"	45	60	At 5 sounded in 15 fathoms
7	9		"	"	"	"	"		" 5.20 " " 16 "
8	10		"	"	"	"	54	30.20	" 6 " " 15 "
9	10		"	"	"	"	"		" 6.30 " " 14 "
10			"	"	"	"	57		" 7.30 made the land bearing N. by E.
11			"	"	"	"	"		distance 12 miles.
12			"	"	"	"	50	30.20	

Distance per Log 126 miles
Latitude, D. R.
Longitude, D. R.
Latitude observed 11 (under off) 1st Light S. 111.
Longitude
Current
Variation

1									
2									
3									
4									
5	9		S by E. North	1	6	50			
6	10		"	"	"	"			
7	10		"	"	2	49	64		
8	10		"	"	3	"	30.27		
9	10		"	"	3	"			
10	10		"	"	3	30	67		
11	10		"	"	3	"			
12	10		"	"	3	56	66	30.20	

Expanded 250 fathoms wire
20 Stakes down.

Thurs & May
8 A.M. to Meridian.
At 10. came to anchor off Pearl Reef in 7 fathoms and veered to 30 fathoms. Fort Macm bearing N. by E. distant 2 miles.
At 12 the U.S. transport "Appamach" passed bound in to Pearl Reef. Lower sails to day

Thurs & May
Meridian to 4 P.M.
At 3.30 U.S. gunboat "Gannet" got underway and passed out. At 4. furlen sails.

Thurs & May
4 to 6 P.M.
At 4.45 got underway and proceeded to sea.

Thurs & May
6 to 8 P.M.
At 6.30 sounded in 15 fathoms
" " " " 15 "

Thurs & May
8 P.M. to midnight.
At 10 P.M. sounded in 22 fathoms
" 11 " " " 21 "
" 12 passed a large ship steering South sounded in 21 fathoms.

Alfred Taylor

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Log of United States Steamer "Albatross" Commanded by Commander D.D. Henshaw.

H.	Lat.	Long.	Course.	Wind		Tide	Therm.	Bar.	Remarks on this day of January 1883
				Direction	Force				
1	10		16 by E.	North	4	6	49.69		At midnight to 4 A.M.
2	10						50		At 2 minutes in 20 fathoms
3	10		16 by E.						9 - 25 fathoms - made
4	10								Cape Hatteras light bearing N. 4. W. dist
5	10								11 miles.
6	9		North					30.16	This & Meyer
7	8		N. 4. W.		3				
8	10						50.49	30.20	to 6 A.M.
9	10		16 by E.						At 4.30 Cape Hatteras light bore S. S. W.
10	10						45.45		by compass, dist 16 miles. At 5 A.M.
11	10								Sounded in 11 fathoms water - passed
12	10							30.19	a gun boat standing to the southward
									and (bearing) S. 45 passed an
									Island in tow of a steamer.
									Sancti Spiritus
									8 A.M. to Meridian.
									At 9 marks the land bearing west.
									distance 15 miles.
									Albert Taylor
1	11		North	North			52		to Meridian to 4 P.M.
2	11		16 by E.						At 2.15 made Cape Henry light house
3									bearing N. 4. W. distant 14 miles - At 4. Cape
4									Henry Light House bore South, distant 2 miles.
5									Took 5.30 for Hampton Roads.
6									This & Meyer
7									to 6 P.M.
8									At 5.30 came to anchor in 9 fathoms water and
9									weighed to 4.5 fathoms. Flag Staff Fortrop Harwar
10									bearing N. 4. E. distant 10 miles.
11									
12									

Apparent 2.30 Galle land
15 miles west.

Draft of ship 13 ft 6 in forward
13 ft 10 in aft

6 to 8 P.M.

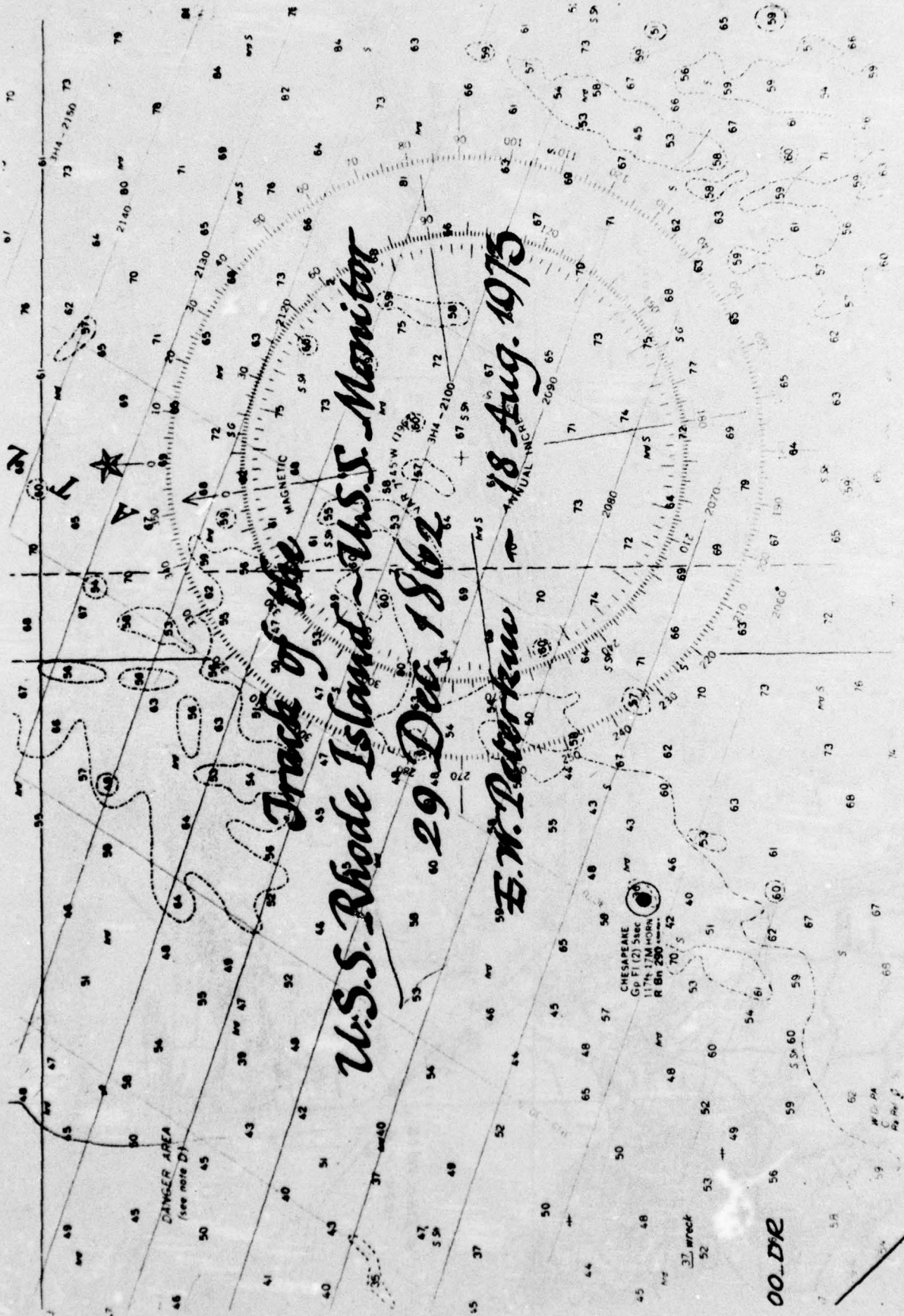
At 6 U.S. Steamer "State of Georgia" got
under way and passed out.

Albert Taylor

8 to Midnight.
Clear ship ready for action.

This & Meyer

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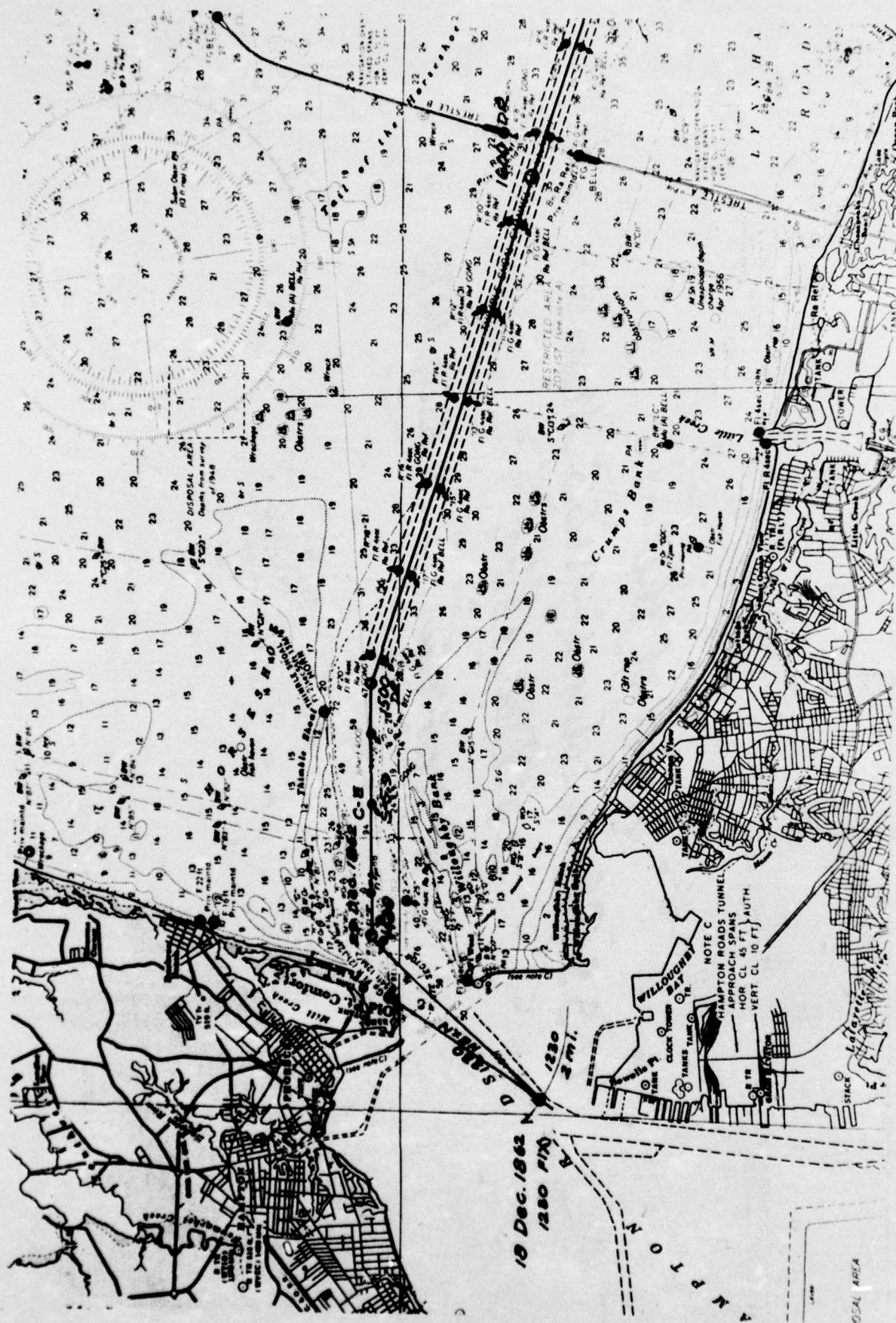


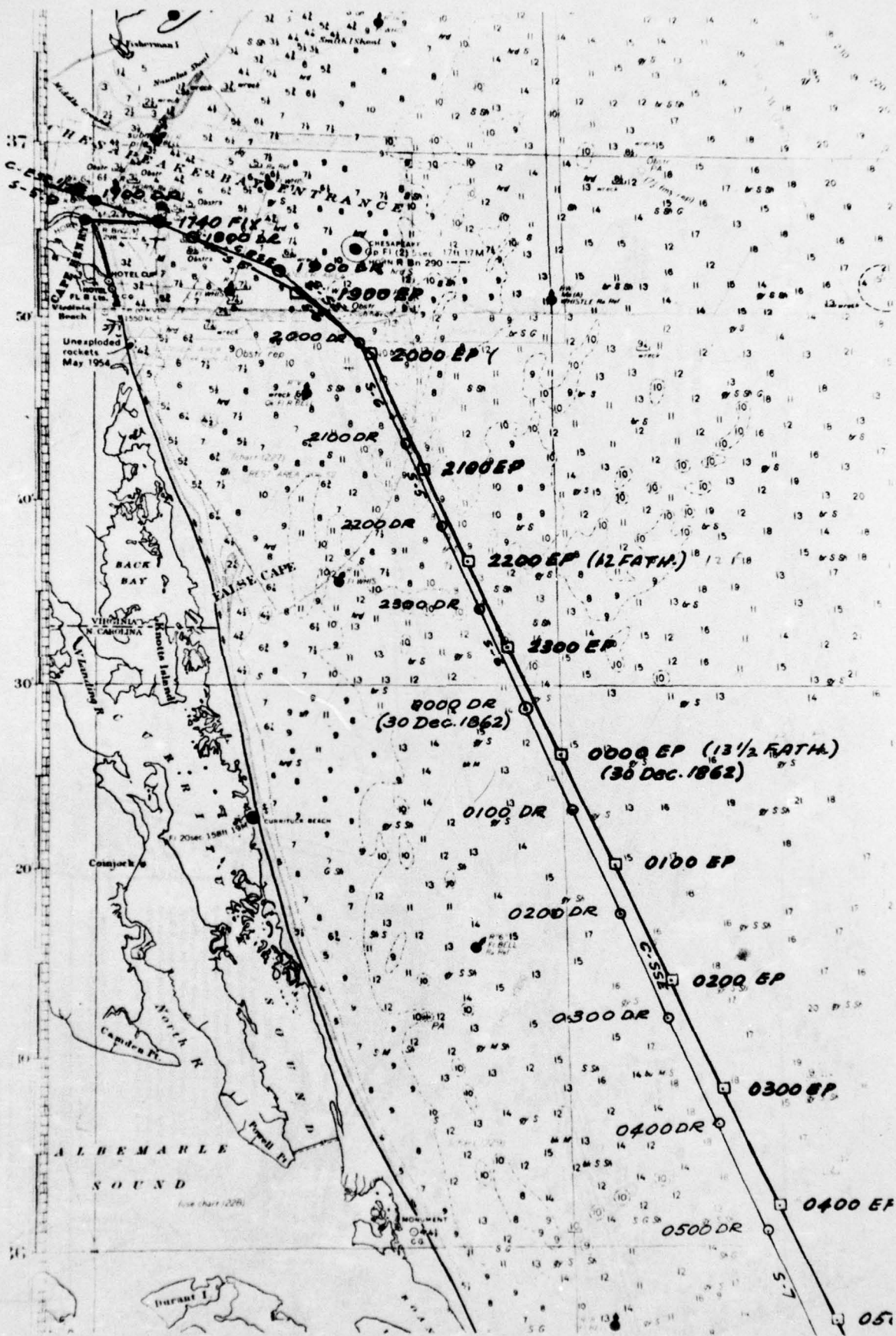
*Track of the
U.S.S. Rhode Island - U.S.S. Monitor
29 Dec 1862
F.W. Parker - 18 Aug. 1913*

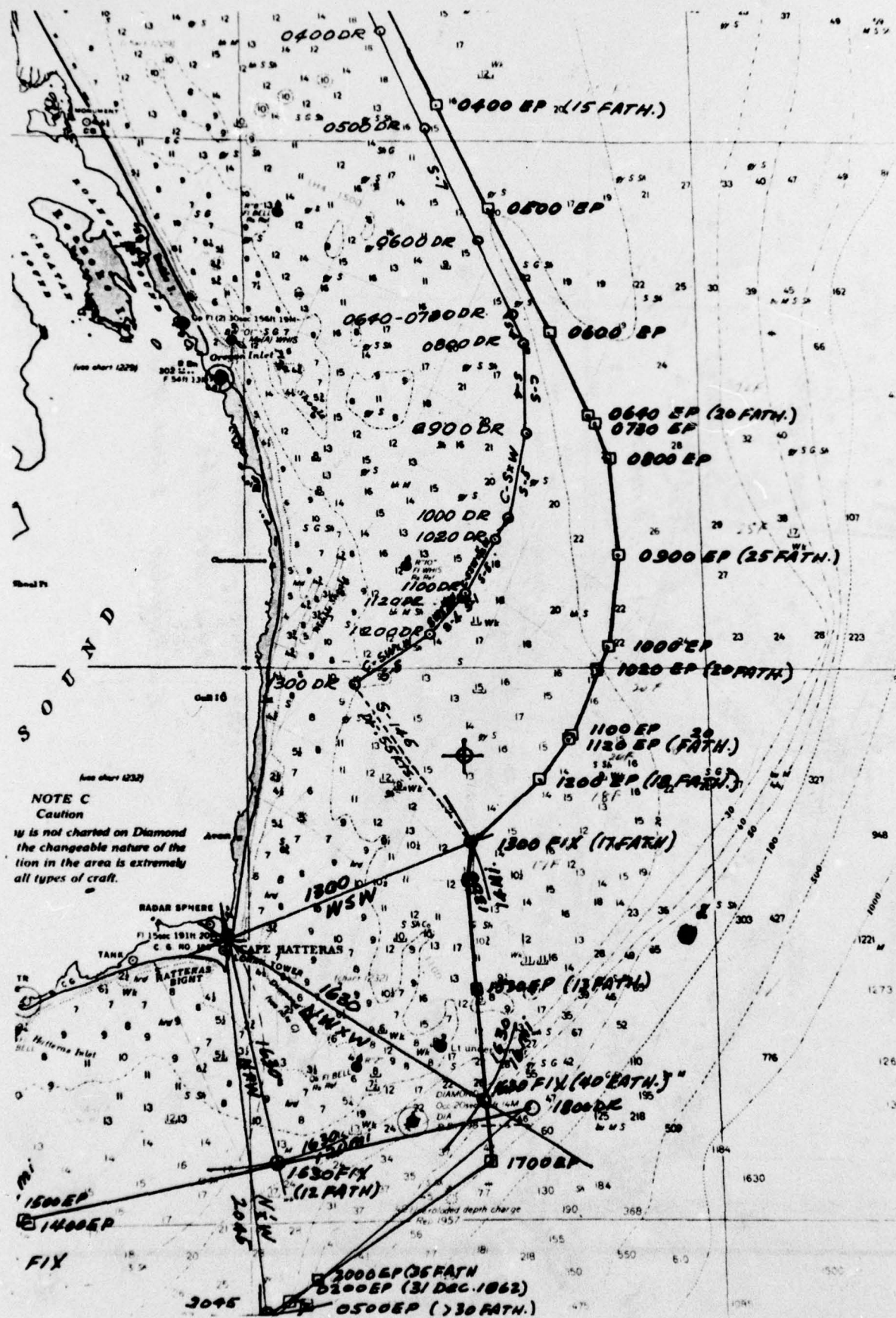
DANGER AREA
(see note D)

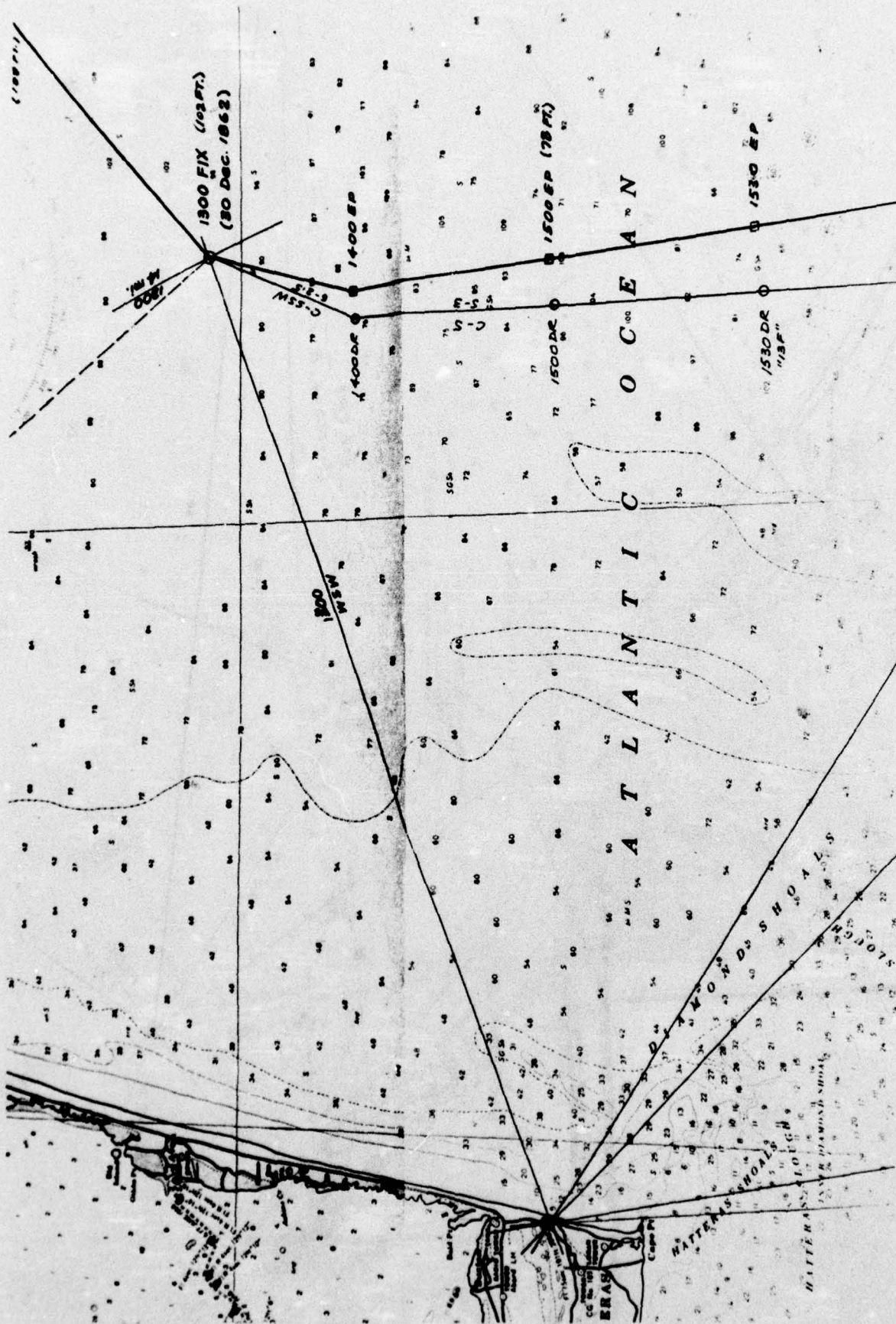
CHESAPEAKE
Gp Ft (2) Sec
11th 7th Horn
R Br 250'

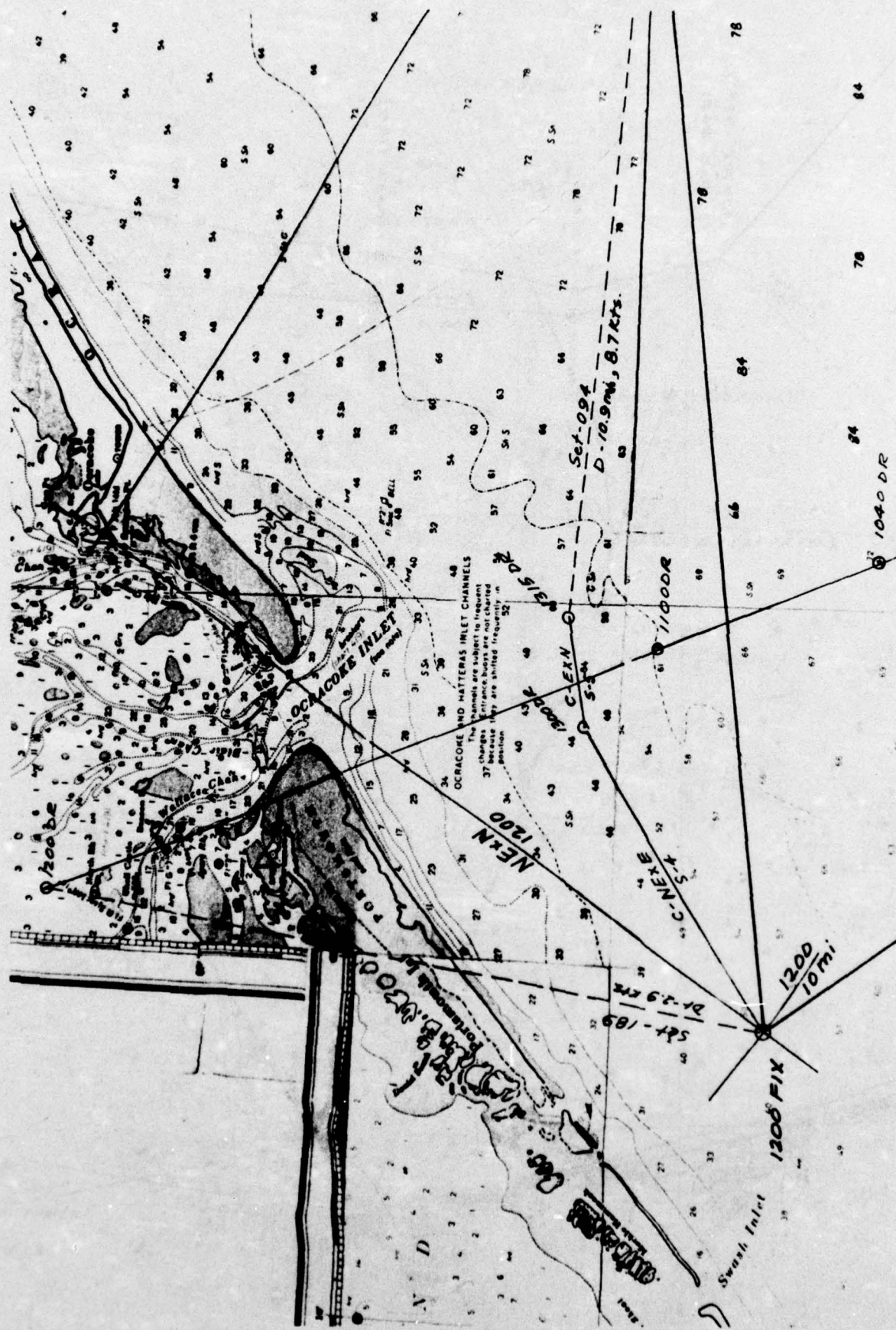
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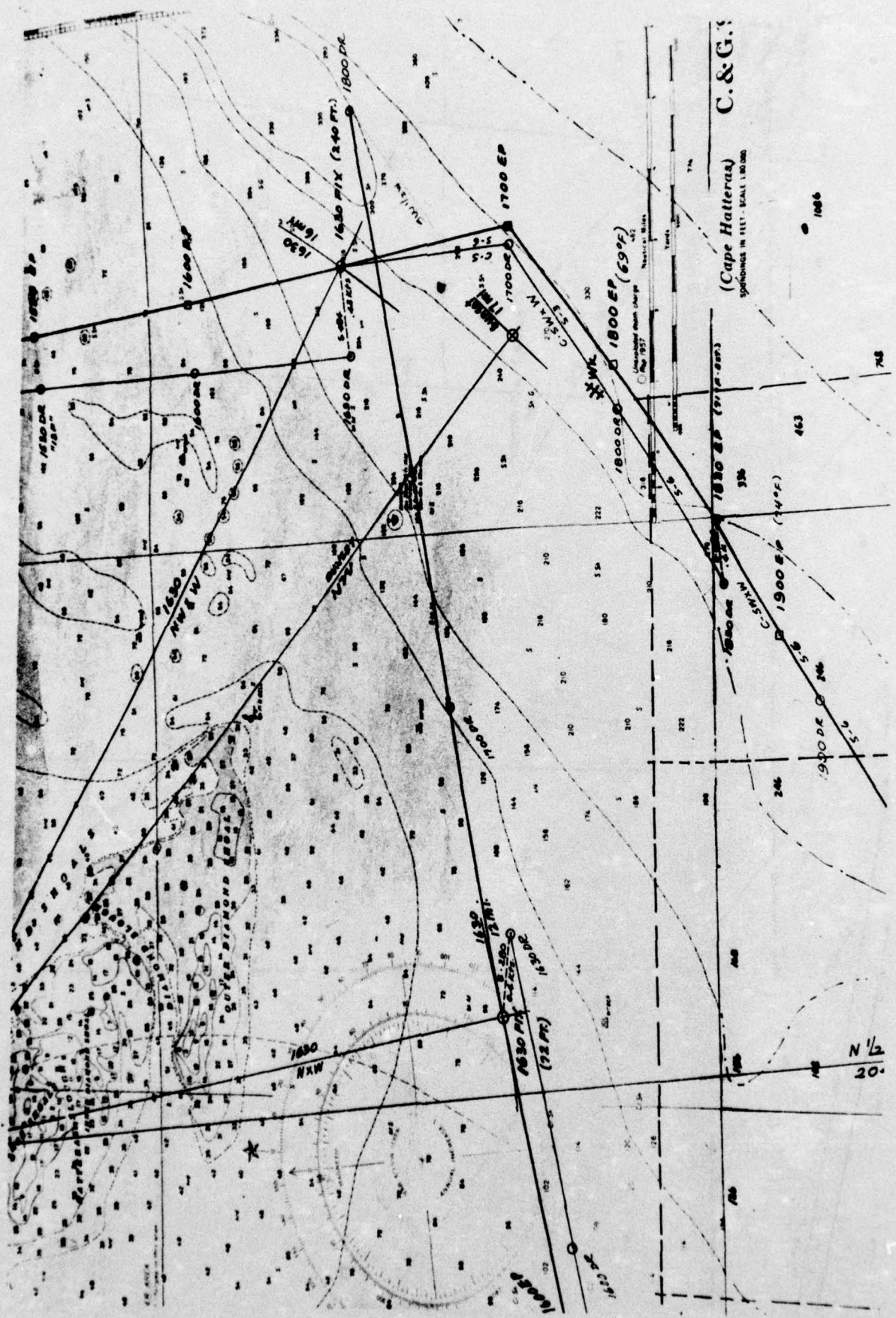






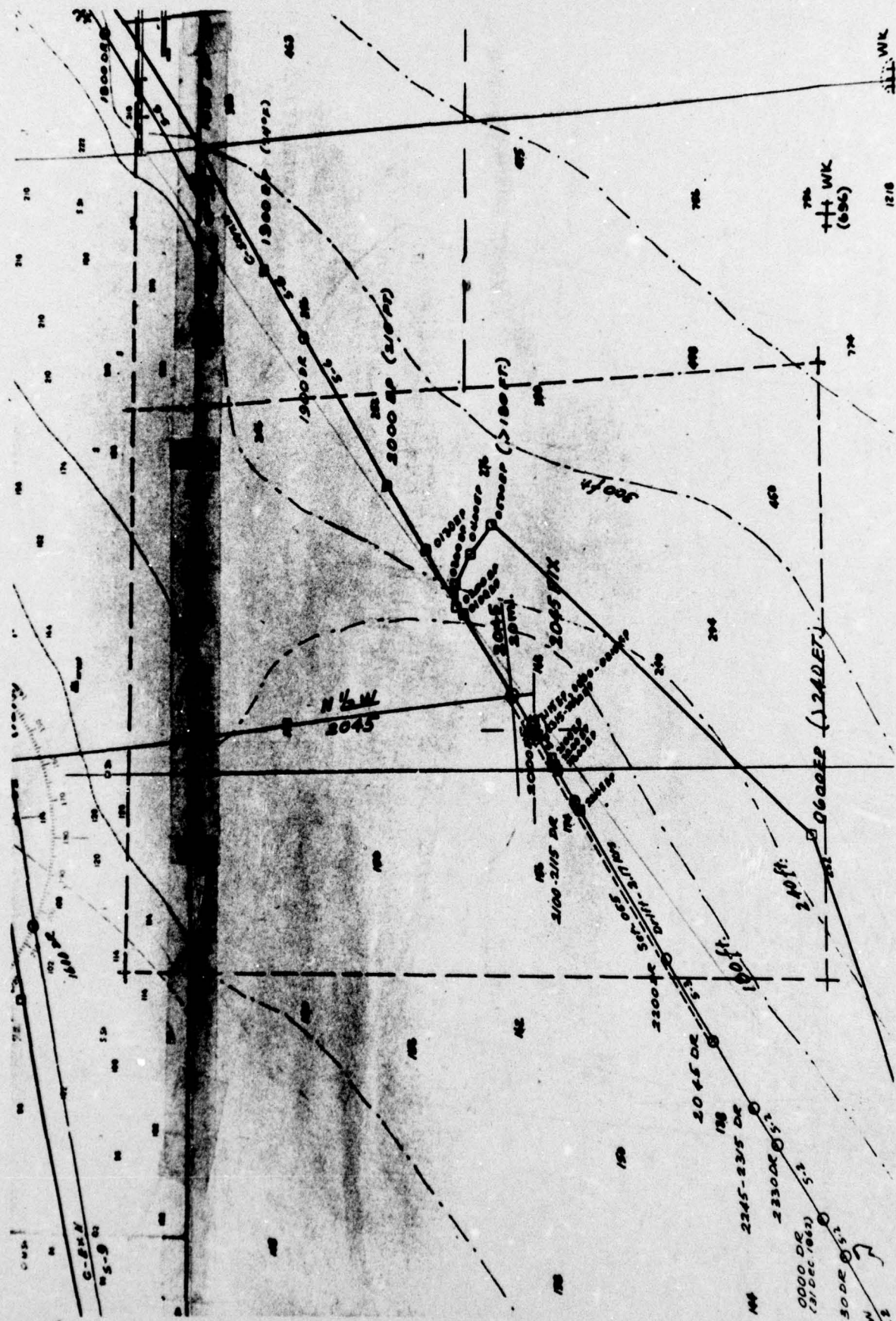


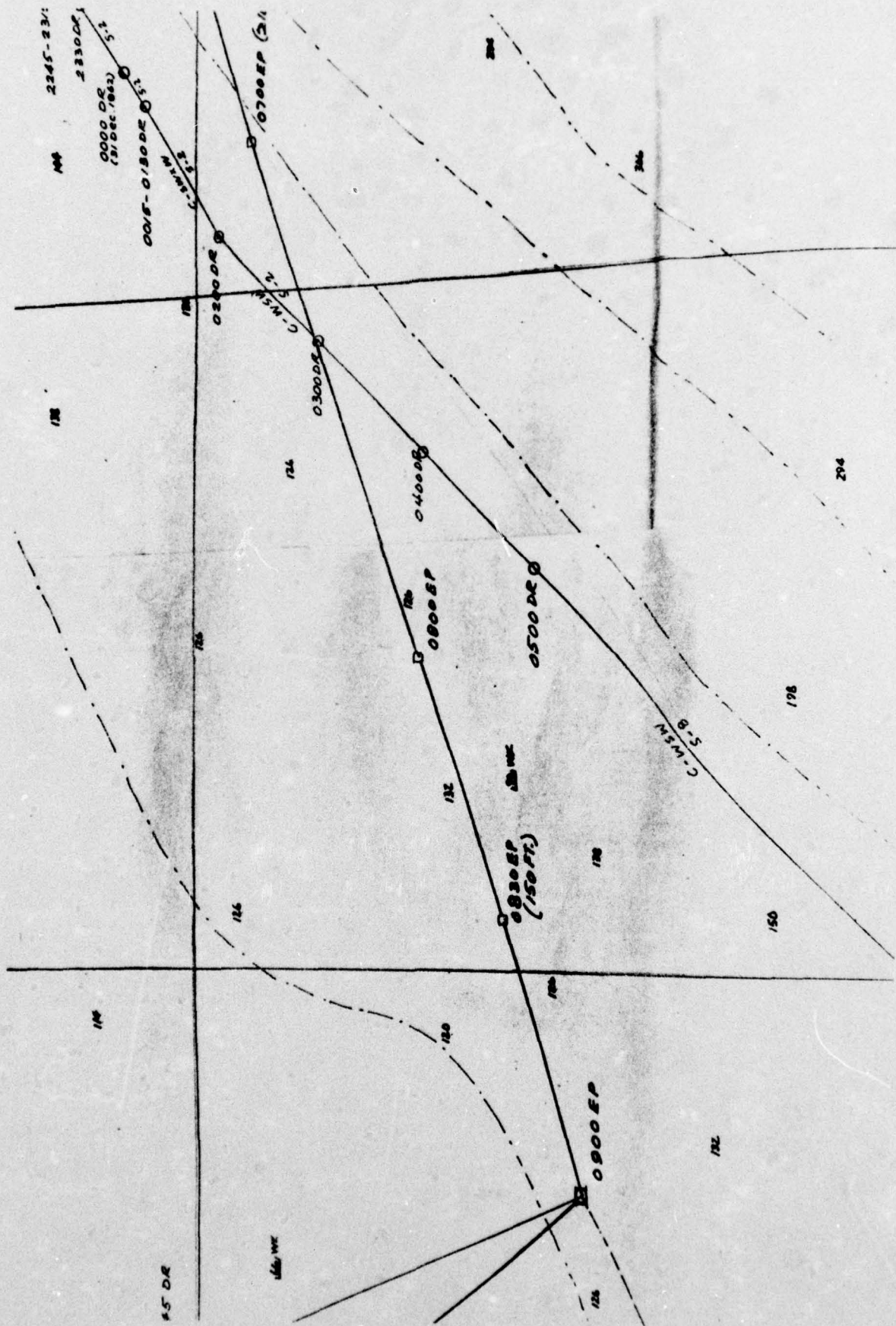




Cape Hatteras, C. & G.

Soundings in feet - Scale 1:10,000





The Monitor & The Merrimac

A Bibliography

By

David R. Smith

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99. Stuyvesant, Moses S. "How the 'Cumberland' Went Down," in Military Order of the Loyal Legion of the United States, Missouri Commandery, War Papers and Personal Reminiscences 1861-1865. St. Louis: Becktold, 1892. I, 204-210.

A sentimental account by a young officer on the Cumberland.

100. Suarce, Colonel Baron de. Le Monitor et le Merrimac. Paris: N. Chaix, 1862. 23 pp.

Biased in favor of the Confederate States.

101. Swinton, William. "The Monitor and the Merrimac," in his Twelve Decisive Battles of the War: A History of the Eastern and Western Campaigns in Relation to the Actions That Decided Their Issue. New York: Dick and Fitzgerald, 1867. Pp. 226-261.

Later edition, 1871. Divided into prelude, battle, and results. Good theoretical knowledge of the art of war, but sometimes inaccurate, careless, and exaggerative. Concludes that the battle "settled the Naval supremacy of the Union."

102. Trexler, Harrison Anthony. The Confederate Ironclad "Virginia" ("Merrimac"). Chicago: University of Chicago Press, 1938. 95 pp.

Tells the life story of the Merrimac; well-written by a professor at Southern Methodist University; scholarly presentation with footnotes. Good end-paper maps.
103. Welles, Gideon. Diary of Gideon Welles. Edited by Howard K. Beale. Boston: Houghton Mifflin, 1911. 3 vols.

Later edition, 1960. Several mentions of the Monitor and the Merrimac are in this diary of the Union Secretary of the Navy.
104. Welles, Gideon. "The First Iron-Clad Monitor," in The Annals of the War. Philadelphia: Times Publishing Co., 1879. Pp. 17-31.

Originally published in the Philadelphia Weekly Times. Official viewpoint by the Secretary of the Navy.
105. Wells, William S., comp. The Original United States Warship "Monitor." New Haven, Conn.: (Cornelius S. Bushnell National Memorial Assn.), 1899. 52 pp.

2d edition, revised, 1906. On cover: "The Story of the Monitor." Copies of correspondence between Cornelius Bushnell, John Ericsson, and Gideon Welles regarding the plans of the Monitor. With some facsimiles and a brief sketch of Bushnell's life.
106. West, Richard S., Jr. "The Merrimack Threat," in his Mr. Lincoln's Navy. New York: Longmans, Green, 1957. Pp. 99-129.

Well-written and well-documented account by an expert on naval actions in the Civil War.
107. (Wheeler, Francis Brown.) The First Monitor and Its Builders. Poughkeepsie, N. Y.: Haight and Dudley, 1884. 12 pp.

Later published in the Magazine of American History, XIII (January, 1885), 59-65. Wheeler takes some of the credit for the Monitor away from Ericsson. A letter from Cornelius S. Bushnell (Magazine of American History, XIII (February, 1885), 181-182) corrects some of Wheeler's remarks.

108. Wheeler, Francis Brown. John F. Winslow, LL.D., and the Monitor. (Poughkeepsie, N. Y.: 1893.) 66 pp.

Wheeler was a friend of Winslow, one of the builders of the Monitor.

109. White, Ellsberry Valentine. The First Iron-Clad Naval Engagement in the World: History of Facts of the Great Naval Battle Between the Merrimac-Virginia, C.S.N., and the Ericsson Monitor, U.S.N., Hampton Roads, March 8 and 9, 1862. New York: J. S. Ogilvie, (c. 1906). (24) pp.

The running title, "History of the World-famous Battleship Merrimac-Virginia, 1855-1862," is more appropriate. White was a member of the Confederate Engineer Corps; strong Southern bias.

110. White, Ruth (Morris). Yankee from Sweden: The Dream and the Reality in the Days of John Ericsson. New York: Holt, 1960. 299 pp.

A descriptive biography, not critically analyzed and with sweeping generalizations. Entertaining.

111. White, William Chapman, and Ruth (Morris) White. Tin Can on a Shingle. New York: Dutton, 1957. 176 pp.

Specifically the story of the Monitor, this book presents a clear description of the ironclad and its opponent, of the crews of the two ships, and of the events which followed the conflict. There are no footnotes, and there is only a poor bibliography, detracting from an otherwise good book.

112. Wilson, Herbert Wrigley. "The Monitor and the Merrimac," in his Ironclads in Action: a Sketch of Naval Warfare from 1855 to 1895 with Some Account of the Battleship in England. London: Sampson Low, Marston and Company, 1896. I, 1-36.

A long chapter on the battle, from the British point of view.

113. Wise, John Sergeant. "The Merrimac and the Monitor," in his The End of an Era. Boston: Houghton Mifflin, 1899. Pp. 191-205.

A boy eyewitness (perhaps) from the shore. His father was instrumental in the raising of the Merrimac. He admits that he did not actually see all he writes about. Several later editions.

114. Worden, John Lorimer, Samuel Dana Greene, and H. Ashton Ramsay. The Monitor and the Merrimac: Both Sides of the Story. New York: Harper, 1912. 72 pp.

Actual experiences are pictured by the first two officers on the Monitor and by the chief engineer on the Merrimac. The first part of the book appeared previously in Lucius E. Chittenden's Recollections of President Lincoln and His Administration (New York: Harper, 1891, 470 pp.). Includes a chapter on the sinking of the Monitor, by an eyewitness, E. W. Watson.

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115. Adams, W. Bridges. "The Merrimac and the Monitor," Once a Week, VI (April 12, 1862), 433-434.

A British reporter explains the novelty of the ironclads in a satiric manner, laughing at the Americans.

- 115a. Allenson, George. "The 'Monitor,'" Railroad Model Craftsman, V (February, 1937), 7-10, 46.

116. Bartol, B. H. ("Remarks on the Monitor"), Journal of the Franklin Institute, LXXIII (April, 1862), 284-285.

Describes the construction of the Monitor and stresses that Ericsson was not the inventor of the revolving turret.

117. "Battle of Hampton Roads — Confederate Official Reports," Southern Historical Society Papers, VII (July, 1879), 305-314.

Reprints of letters and reports of Jefferson Davis, Stephen Mallory, and Franklin Buchanan (his battle account).

118. Benedict, George Grenville. "The Builders of the First Monitor," The Century Magazine, XXXIX (March, 1890), 798-799.

Adds some facts to earlier accounts of the subject, giving credit to other men in addition to Ericsson.

119. Bennett, Frank Marion. "Ericsson's Monitor," The Engineer, CXXIV (August 24, 1917), 161-162.

Letter to the editor, giving facts from the author's article in Cassier's Magazine (no. 120).

120. Bennett, Frank Marion. "The U. S. Ironclad 'Monitor,'" Cassier's Magazine, XIII (April, 1898), 459-474.

A detailed history of the ship by an assistant engineer in the U. S. Navy. Only a brief account of the battle itself.

121. Bisset, G. A. "First American Iron-Clad — the Merrimac," Marine Engineering, XXV (December, 1920), 983.

Description of the Merrimac, with diagrams, by a Commander in the U. S. Navy.

122. Bradley, Chester D. "President Lincoln's Campaign Against the Merrimac," Journal of the Illinois State Historical Society, LI (Spring, 1958), 59-85.

Interesting article with a different slant. Information culled mainly from the Official Records.

123. Brooke, John Mercer. "The Virginia, or Merrimac; Her Real Projector," Southern Historical Society Papers, XIX (January, 1891), 3-34.

Quotes many letters. Contains a more or less technical statement of an eyewitness (Lt. Robert D. Minor, an officer on the Merrimac), of the fighting ability of the vessel. Later reprinted (Richmond, Va.: W. E. Jones, 1891, 34 pp.) with the subtitle: A Statement of the Facts Connected with Her Conversion into an Ironclad.

124. Brooke, St. George Tucker. "The Merrimac-Monitor Battle," The Transallegheeny Historical Magazine, II (October, 1902), 30-42.

Personal recollections of a Confederate sailor who saw the battle from the shore.

125. Bryan, Anna Semmes. "The Virginia and the Monitor," Confederate Veteran, XXXII (September 1924), 346-347.

Short account, with most of the material furnished the author by J. R. Eggleston and Catesby ap R. Jones, both officers on the Merrimac.

126. Butts, Francis Banister. "The Loss of the Monitor, by a Survivor," The Century Magazine, XXXI (December, 1885), 299-302.

By a member of the Monitor's crew when it was sunk in December, 1862. Later reprinted in Battles and Leaders of the Civil War.

127. Campbell, Mrs. A. A. "The First Fight of Ironclads," Confederate Veteran, XXIX (August, 1921), 290-291.

Uninformative, journalistic account of the battle.

128. Catton, Bruce. "When the Monitor Met the Merrimac," New York Times Magazine, March 4, 1962, pp. 16, 68, 70-71.

This article is adapted from a section of the author's Centennial History of the Civil War and presents the modern interpretation that the battle was a stand-off. Two engravings are reproduced.

129. Coates, Joseph Hornor. "The Advent of the Ironclads," United Service, I (October, 1879), 586-600.

Scholarly treatment of the first ironclads as an innovation in modern warfare.

130. Coffin, Roland F. "The First Fight Between Ironclads," Outing, X (August, 1887), 416-421.

A vivid account by an eyewitness on the Union gunboat Mystic.

131. Colston, Raleigh Edward. "Watching the 'Merrimac'" The Century Magazine, XXIX (March, 1885), 763-766.

An eyewitness account by a strongly biased Confederate commander on the shore. Later reprinted in Battles and Leaders of the Civil War.

132. Curtis, Frederick H. "Congress and the Merrimac," New England Magazine, XIX (February, 1899), 687-693.

Curtis was a gunner on the Congress. His personal experiences are retold by Frank Stedman Alger.

133. Davis, Charles H. "History of the U. S. Steamer Merrimack," The New England Historical and Genealogical Record, XXVIII (July, 1874), 245-248.

Gives details of construction and includes a chronology of prominent events in the history of the Merrimac. Not outwardly biased.

134. Dawson, Lionel. "Starting Something," Blackwood's Magazine, CCLXXIV (September, 1953), 269-278.

By a captain in the Royal Navy.
135. (Eggleston, J. R.) "Captain Eggleston's Narrative of the Battle of the Merrimac," Southern Historical Society Papers, n.s., III (September, 1916), 166-178.

By a lieutenant on the Merrimac. "The main objective of this article is to fix in the minds of the younger generation the fact that the Virginia defeated the Monitor. . . ."
136. Ericsson, John. "The Monitors," The Century Magazine, XXXI (December, 1885), 280-299.

A detailed account of the planning and building of the Monitor is given, along with many diagrams. Later reprinted in Battles and Leaders of the Civil War, with the title, "The Building of the 'Monitor,'"
137. "Ericsson's Revolving Turreted War Ship," Scientific American, LXIII (September 6, 1890), 144-145.

Disputes Timby's claim to the invention of the revolving turret.
138. Fiveash, Joseph Gardner. "The Virginia's Great Fight on Water. Her Last Challenge and Why She Was Destroyed," Southern Historical Society Papers, XXXIV (July, 1906), 316-326.

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139. Foute, R. C. "Echoes from Hampton Roads," Southern Historical Society Papers, XIX (July, 1891), 246-248.

The faulty recollections of a midshipman on the Merrimac. Original manuscript in the Huntington Library.
140. Fowler, George L. "Ericsson's First Monitor and the Later Turret Ships," Engineering Magazine, XIV (October, 1897), 110-128.

Mainly on later turret ships, but several pages, with diagrams, on the Monitor. From an engineering standpoint.

141. Gambrell, Herbert. "After the Merrimac," Reader's Digest. XXXI (October, 1937), 39-42.

Short account discussing the Merrimac and its successors.
142. Gautier, Ange Simon. "Combat naval de Hampton-Roads (États-Unis), 8 et 9 Mars, 1862," Revue maritime et coloniale, VI (April, 1862), 806-819.
143. "The Grave of the Monitor," Harper's Weekly, LVI (April 20, 1912), 24.

Discusses the sinking of the Monitor.
144. "The Great Naval Revolution," The Cornhill Magazine, V (May, 1862), 550-559.

A British article, gives the Monitor-Merrimac battle as an example of the naval revolution.
145. Greene, Samuel Dana. "An Eyewitness Account: 'I Fired the First Gun and Thus Commenced the Great Battle,'" American Heritage, VIII (June, 1957), 10-13, 102-105.

Copy of a letter of March 14, 1862, by the young executive officer on the Monitor to his family. Gives a personal narrative of the voyage of the Monitor from New York to Hampton Roads, and of the battle. Well-edited, with errors pointed out.
146. Greene, Samuel Dana. "The Fight Between the 'Monitor' and the 'Merrimac,'" United Service, X (October, 1893), 350-356.

Same letter as no. 145. No notes or editing.
147. Greene, Samuel Dana. "In the 'Monitor' Turret, March 9, 1862," The Century Magazine, XXIX (March, 1885), 754-763.

Personal account of the battle. Later reprinted in Battles and Leaders of the Civil War.
148. Greene, Samuel Dana. "The 'Monitor' at Sea and in Battle," United States Naval Institute Proceedings, XLIX (November, 1923), 1839-1847.

Same letter as no. 145. No notes or editing.

149. Harper's Weekly, VI-VII (February 15, 1862 — January 24, 1863).

Contemporary reporting of the events of the war; many references to the Monitor and the Merrimac. Includes engravings showing the interiors and exteriors of both ships.

150. Hislam, Percival A. "The Jubilee of the Turret-Ship," Scientific American, CVI (February 17, 1912), 153-154.

Diagrams of the Monitor and later turret ships; written from a scientific viewpoint.

151. Hollyday Lamar. "The Virginia and the Monitor," Confederate Veteran, XXX (October, 1922), 380-382.

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152. Hovgaard, William. "Who Invented the Monitor?" Army and Navy Journal, XLVII (November 27, 1909), 357.

Brief statement dismissing Timby's claims.

153. Hughes, Robert Morton. "The Monitor Defeated the Merrimac — Myth," Tyler's Quarterly Historical and Genealogical Magazine, VIII (July, 1926), 30-36.

A Southern viewpoint.

154. "Ironclad Echo," Newsweek, XIV (August 21, 1939), 14-15.

Discusses a memorial suggested for Hampton Roads, with a good map of the area.

155. "John Ericsson's Deadly Cheese Box," Life, XXXIX (October 17, 1955), 113.

Short account of the Monitor, with an engraving showing the launching of the ironclad.

156. Jones, Catesby ap Roger. "The First Confederate Iron-Clad the 'Virginia,' Formerly the United States Steam Frigate 'Merrimac,'" The Southern Magazine, XV (December, 1874), 200-207.

Clear and concise account by the executive officer on the Merrimac, prepared shortly before his death. Reprinted in Transactions of the Southern Historical Society, I (1874), 200-207; and under the title "Services of the 'Virginia' (Merrimac)," in the Southern Historical Society Papers, XI (January 1883), 65-75; in United Service, VIII (June, 1883), 660-668; and in Robert Alonzo Brock, ed., Gen. Robert Edward Lee; Soldier, Citizen and Christian Patriot, by Mrs. Roger A. Pryor, et al. (Richmond, Va.: B. F. Johnson, 1897, pp. 538-549).

157. LaFaucheur, L. J. "The Fight Between the Merrimac and Monitor. Account by a Confederate Spectator," Belford's Magazine, VI (December, 1890), 104-112.
158. Lamb, Martha Joanna Reade (Nash). "John Ericsson the Builder of the Monitor, 1803-1889," Magazine of American History, XXV (January, 1891), 1-17.
A biographical sketch.
159. Lewis, Charles Lee. "The Confederate Ironclad 'Virginia,'" The Southern Magazine, II (June, 1935), 12-13, 48-49.
General description of the Merrimac.
160. McBlair, Charles H. "Historical Sketch of the Confederate Navy," United Service, III (November, 1880), 588-613.
Also in United Service, 3d ser., III (May, 1903), 1155-1183.
161. MacCord, Charles W. "Ericsson and His 'Monitor,'" North American Review, CXLIX (October, 1889), 460-471.
By a professor of mechanical drawing at Stevens Institute, and one time chief draftsman for Ericsson. Written soon after Ericsson's death, this article gives him all the credit for the ironclad.
162. McDonald, Joseph. "How I Saw the Monitor-Merrimac Fight," The New England Magazine, XXXVI (July, 1907), 548-553.
A biased and inaccurate account by a sailor on the Minnesota, written down by Herbert McCrillis.
163. McMaster, Gilbert Totten. "A Little Unwritten History of the Original U.S.S. Monitor," United States Naval Institute Proceedings, XXVII (December, 1901), 725-732.

164. Martin, Harrison P. "When the Monitor Went Down," United States Naval Institute Proceedings, LXVII (July, 1941), 927-931.
165. "The Merrimac and Monitor," Southern Historical Society Papers, XI (January, 1883), 31-40.

Various letters showing that the crew of the Monitor does not deserve prize money from Congress.
166. "The Merrimac and the Monitor," The Eclectic Magazine of Foreign Literature, Science and Art, LVI (August, 1862), 528-537.

Assesses the results at Hampton Roads in relation to British naval needs. "Taken from The London Quarterly."
167. "The 'Merrimac' and the 'Monitor,'" The Gentleman's Magazine, CCXII (May, 1862), 631-635.
168. "The Merrimac and the Monitor," The Quarterly Review, CXI (April, 1862), 562-576.

Same article as no. 166.
169. "Merrimack and Monitor," Chicago History, III (Spring, 1954), 337-346.

A short history of the engagement, including an undated letter from a member of the Monitor's crew ("John"), describing the battle.
170. "The Monitor and the Merrimac," Leisure Hour, XIII (July 2, 1864), 427-429.

Reports of correspondents to a British periodical.
171. "Monitor-Merrimac — Ericsson," United States Naval Institute Proceedings, LIII (February, 1927), 198-203.

Information furnished by Lt. Comm. Richard Wainwright (ret.) of the Office of Naval Records and Library.
172. Morgan, William J. "The Virginia No Longer Exists," The Iron Worker, XXIV (Summer, 1960), 1-7.

The story of the destruction of the Merrimac, by the Head of the Historical Research Section of the Navy's Naval History Division.

173. "A Naval Fight of '62. A Vivid Description of the Destruction of the Frigate Congress by the Merrimac. . . , Told by an Eyewitness," The Quaker, V (April, 1899), 84-88.

174. Newton, Virginius. "The Ram Merrimac, Detailed Accurate History of Her Plan and Construction. . . ," Southern Historical Society Papers, XX (January, 1892), 1-26.

A long, biased account by a Confederate midshipman, taken from the Richmond Dispatch. Later reprinted under the title The Confederate States Ram, Merrimac or Virginia: The History of Her Construction and Her Engagements with the United States Fleet, March 8-9, 1862 (Richmond, Va.: William Ellis Jones, 1892, 28 pp.). Also (Richmond, Va.: Hermitage Press, 1907, 34 pp.).

175. "Officially, There's a K in Merrimac," Civil War History, VII (March, 1961), 89.

Reports the results of research by a Navy Department historian.

176. Oliver, Frederick L. "The Officers of the Monitor and Merrimack," Shipmate, XXVI (August, 1963), 6-7.

177. O'Neil, Charles. "Engagement Between the 'Cumberland' and 'Merrimack,'" United States Naval Institute Proceedings, XLVIII (June, 1922), 863-893.

This article, by a former sailor on the Cumberland who later became an admiral, gives new sidelights on the battle.

178. Osborn, Philip Ransom. "The American Monitors," United States Naval Institute Proceedings, LXIII (February, 1937), 235-238; (May, 1937), 713-714; (July, 1937), 1021-1023.

179. Parker, Foxhall Alexander. "The 'Monitor' and the 'Merrimac,'" United States Naval Institute Proceedings, I (1874), 155-162.

180. Phillips, Dinwiddie Brazier. "The Career of the Iron-Clad Virginia (Formerly the Merrimac), Confederate States Navy, March-May, 1862," Collections of the Virginia Historical Society, n. s., VI (1887), 193-231.

181. Phillips, Dinwiddie Brazier. "The Career of the Merrimac," The Southern Bivouac, V (March, 1887), 598-608.

Adaptation of no. 180. Condensed in Battles and Leaders of the Civil War.

182. Porter, John W. H. "Origin of an Ironclad; How the Merrimac Came to Be Transformed — the Original Plans Still in Existence," Confederate Veteran, XXIII (May, 1915), 219-221.

The son of the designer of the Merrimac relates the story of the construction of the ship, mentioning that he still has the original plans.

183. Preston, Robert L. "Did the 'Monitor' or 'Merrimac' Revolutionize Naval Warfare?" William and Mary Quarterly, XXIV (July, 1915), 58-66.

From a letter in the Washington Post of March 9, 1912 (the 50th anniversary of the battle). The author believes the credit for revolutionizing naval warfare belongs to the Merrimac.

184. Ramsay, H. Ashton. "The Most Famous of Sea Duels," Harper's Weekly, LVI (February 10, 1912), 11-12.

By an engineer who served on the Merrimac.

185. Ramsay, H. Ashton. "Wonderful Career of the Merrimac," Confederate Veteran, XV (July, 1907), 310-313.

One of the Merrimac's officers gives a short personal account in a speech.

186. Ranson, Thomas. "Monitor and Merrimac at Hampton Roads," Hobbies, LXIV (September, 1959), 110-111, 119.

A letter from a soldier stationed at Hampton Roads, edited by Doris H. Hamilton of the firm, Charles Hamilton Autographs, Inc.

187. "The Revival of the Monitor," The Engineer, CXXIV (August 17, 1917), 133-135.

Discusses the revival of monitor-type vessels in World War I. Reprinted in United States Naval Institute Proceedings, XLIII (October, 1917), 2372-2378.

188. Ryden, George H. "How the Monitor Helped the Army in the Peninsular Campaign of 1862," The American-Swedish Monthly, XXXI (March, 1937), 6-9.

Brief article relating the Monitor's "neutralization" of the Merrimac to the overall Peninsular Campaign.
189. Sargent, Epes. "Ericsson and His Inventions," The Atlantic Monthly, X (July, 1862), 68-81.

A biographical sketch of Ericsson just after he had won fame because of the Monitor.
190. Say, Harold B. "Let the Monitor Steam Again," True, the Man's Magazine, XXII (January, 1948), 30-32, 104-108.
191. Selfridge, Thomas Oliver, Jr. "Merrimac and the Cumberland," The Cosmopolitan, XV (June, 1893), 176-184.

An eyewitness account by a lieutenant on the Cumberland.
192. "Shears That Built the Merrimac," American Machinist, LXXXV (May 14, 1941), 428.

Illustrates the machine used for punching and trimming the plates of the Merrimac in the Norfolk Navy Yard.
193. Shipp, J. F. "The Famous Battle of Hampton Roads," Confederate Veteran, XXIV (July, 1916), 305-307.

A personal account by a Confederate soldier in the 4th Georgia regiment who saw the battle from the shore. He discounts the belief that the Monitor won.
194. Shippen, Edward. "Notes on the 'Congress-Merrimac' Fight," The Century Magazine, XXX (August, 1885), 642.

By a doctor on board the Congress.
195. Shippen, Edward. "A Reminiscence of the First Iron-Clad Fight," Lippincott's Magazine, XXI (February, 1878), 218-226.

An account of the Congress-Merrimac fight, signed "E. S."

196. Shippen, Edward. "Two Battlefield Pictures: A Reminiscence of the First Iron-Clad Fight," United Service, IV (January, 1881), 53-78.

Also in United Service, 3d ser., III (May, 1903), 1015-1043.

197. Sinclair, Arthur. "How the Merrimac Fought the Monitor," Hearst's Magazine, XXIV (December, 1913), 884-894.

Personal reminiscences of the writer who served on board the Merrimac. His conclusion was that the outcome was a draw. Illustrated with photographs and drawings.

198. Smith, Alan Cornwall. "The 'Monitor-Merrimac' Legend," United States Naval Institute Proceedings, LXVI (March, 1940), 385-389.

Points out some of the legendary ideas which have been prevalent regarding the importance of the battle; a good, unbiased summary.

199. Snow, Elliot. "The Metamorphosis of the 'Merrimac,'" United States Naval Institute Proceedings, LVII (November, 1931), 1518-1521.

The reconstruction of the Merrimac and the events preceding the battle are explained by a navy admiral.

200. "Sobremennoe Obozrenie," Morskoĭ Sbornik, April, 1862, pp. 76-95.

Voluminous descriptions and plans of both ships, prepared by the Russian admiralty.

201. "Some Further Particulars of the Fight Between the Merrimac and Monitor," Once a Week, VI (May 17, 1862), 582-584.

A letter from a correspondent in Fortress Monroe, March 9, 1862, describes the attack by the Merrimac on the Cumberland, the Congress, and the Minnesota for the British periodical. There is nothing on the fight with the Monitor, as stated in the title.

202. (Somerset, Henry Charles Fitzroy, 8th Duke.) "The Merrimac and Monitor," Southern Historical Society Papers, XVI (April, 1888), 218-222.

The Duke of Somerset's speech in Parliament on the battle is reprinted from the "Delta of May 15, 1862." Also given in Hansard.

203. "Stevens Receives Monitor Drawings," Marine Engineering and Shipping Review, L (August, 1945), 158-159.

Reports gift of original Monitor drawings to Stevens Institute of Technology, Hoboken, N. J. From an article of the same title in Stevens Indicator, LXI (May, 1945), 3, 5.
204. Still, William N. "Confederate Naval Strategy: The Ironclad," Journal of Southern History, XXVII (August, 1961), 330-343.

A well-documented, general discussion of the Confederate ironclads by a history instructor in Mississippi, with several pages devoted to the Merrimac.
205. Stimers, Alban C. "Aboard the Monitor in Hampton Roads," Niagara Frontier, III (Summer, 1956), 47-50.

Letter written to the author's father, May 5, 1862.
206. Tindall, William. "The True Story of the Virginia and the Monitor; an Account of an Eye-witness," with an Introduction by Milledge L. Bonham, The Virginia Magazine of History and Biography, XXXI (January, 1923), 1-38; (April, 1923), 89-145.

A long, fairly accurate account of the battle. Also published separately (Richmond, Va.: Virginia Historical Society, 1923, 90 pp.)
207. (Tyler, Lyon Gardiner.) "Virginia, Founder of the World's Navies," Tyler's Quarterly Historical and Genealogical Magazine, III (October, 1921), 84-106.

The writer contends that the victory of the Merrimac changed the character of naval warfare everywhere and thus it founded the present navies of the world.
208. "The Virginia-Merrimac: Behind the Scenes in the Confederate Navy Department, from the New York Sun," United Service, n.s., XIII (May, 1895), 493-497.
209. Walker, Henry L. "CSS Virginia," United States Naval Institute Proceedings, LXXVIII (October, 1952), 1143.

Refers to the misuse of the name "Merrimac" in an article by Neville T. Kirk ("The Origins of American Naval Photography," United States Naval Institute Proceedings, LXXVII (June, 1951), 643-644).

210. Walton, Harry. "Monitor: History's Strangest Warship," Popular Science, CLXXVIII (March, 1961), 72-76.

211. Webber, John. "The Monitor and the Merrimac," The Collector, XXV (October, 1912), 116-117.

A letter written by an eyewitness to his father a few days after the battle.

212. Weeks, Grenville M. "The Last Cruise of the Monitor," The Atlantic Monthly, XI (March, 1863), 366-372.

A member of the Monitor's crew discusses the sinking of the ship.

213. Wood, John Taylor. "The First Fight of Ironclads; March 9, 1862," The Century Magazine, XXIX (March, 1885), 738-754.

A partially documented account, well-illustrated with engravings and maps, by one of the lieutenants on the Merrimac. Later reprinted in Battles and Leaders of the Civil War.

214. Woods, Helen. "Timby the Forgotten," Harper's Weekly, LV (February 11, 1911), 11,26.

Discusses "the republic's disregard for the memory of the inventor who made the 'Monitor,' with her odd, revolving turret, possible."

215. Young, Franklin K. "A Tale of Two Frigates. Unwritten History of One of the Most Peculiar and Well-Known Episodes of the Civil War, by an Eye-Witness," told to Franklin K. Young, Nickell Magazine, VII (May, 1897), 269-278.

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216. Great Britain. Hansard's Parliamentary Debates. 3d series, vol. 166 (1862), 263-289, 430-444.

On March 31, 1862, Sir Frederic Smith in Commons gave his observations on the battle and asked whether it would be prudent to consider ironclads for British port defense. On April 3, 1862, the Earl of Hardwicke mentioned that the battle showed that wooden vessels were helpless against the ironclad ones. He was answered by the Duke of Somerset.

217. U. S. Congress. House. Committee on Naval Affairs. Officers and Crew of the United States Steamer Monitor. 48th Cong., 1st sess., H. Rept. 335, parts 1 & 2 to accompany H.R. 244. Washington: 1884. 10 pp.

Mr. Ballentine presents the committee report recommending against passage of the bill. Following the above is "Views of the Minority," led by Mr. Thomas, 9 pp. Mr. Ballentine later presented another adverse report (H. Rept. 1725 to accompany H.R. 244, 19 pp.).

218. U. S. Congress. House. Committee on Naval Affairs. Prize-Money to Officers and Crew of the United States Steamer Monitor. 47th Cong., 1st sess., H. Rept. 144 to accompany H.R. 3840. Washington: 1882. 8 pp.

Mr. Thomas of the committee presented this report to Congress, recommending passage of the bill.

219. U. S. Congress. House. Committee on the Library. . . . Virginia (Merrimac)-Monitor Commission. 76th Cong., 1st sess., H. Rept. 1168 to accompany H. Con. Res. 327. Washington: 1939. 7 pp.

Mr. Keller submitted this report with regard to establishing a memorial at Hampton Roads.

220. U. S. Congress. Joint Committee on the Conduct of the War. Reports of the Joint Committee on the Conduct of the War. 37th Cong., 3d sess., S. Doc. 108, part 3. Washington: 1863. 657 pp.

The testimony of Captain Gustavus Vasa Fox, given on March 19, 1862, is presented (pp. 415-421). Captain Fox answers questions about the Monitor-Merrimac battle.

221. U. S. Congress. Senate. Committee on Naval Affairs. Report (on the Relief of the Officers and Crew of the United States Steamer Monitor, Who Participated in the Action with the Rebel Iron-Clad Merrimac, on the 9th Day of March, 1862). 47th Cong., 1st sess., S. Rept. 394 to accompany S. 369. Washington: 1882. 8 pp.

Mr. Cameron presents the report which recommends passage.

222. U. S. Congress. Senate. Committee on Naval Affairs. Report (on the Relief of the Officers and Crew. . .). 48th Cong., 1st sess., S. Rept. 153 to accompany S. 867. Washington: 1884. 7 pp.

Mr. Hale presents the report which recommends passage.

223. U. S. Congressional Globe. 37th Cong., 2d sess., vol. 2 (March 11-27, 1862), 1155, 1393-1402.

Mr. Wilson introduces a resolution that the Committee on Naval Affairs look into the engagement. Two weeks later there is a long debate on the value of ironclads, saying that the Monitor was a successful experiment.

224. U. S. Congressional Record. 47th Cong., 1st sess., 13:1 (December 12, 1881 — January 31, 1882), 67-68, 302, 760.

Mr. Cameron presented a petition of Lt. Worden to the Senate asking for prize money for defeating the Merrimac; referred to committee. Papers relating to Worden's claim presented to the House and a bill (H.R. 3840) is read by Mr. Thomas and referred to committee of the whole. Additional discussion is found in the Congressional Record, 47th Cong., 1st sess., 13:3 (April 5, 1882), 2599; 13:5 (May 24, 1882), 4194-4198; 13:7 (August 3, 1882), 6847-6848; 47th Cong., 2d sess., 14:1 (December 8, 1882), 120, 126-134; 48th Cong., 1st sess., 15:1 (December 10-20, 1883), 66, 200; 15:2 (February 11-26, 1884), 1010, 1065, 1397; and 15:5 (May 31, 1884), 4731.

225. U. S. Navy Department. Destruction of the United States Vessels and Other Property at Norfolk, Virginia. Letter from the Secretary of the Navy, Transmitting, in Compliance with a Resolution of the House of Representatives of July 16, 1861, the Correspondence Relative to the Destruction of the United States Vessels and Other Property at the Navy Yard at Norfolk, Virginia. 37th Cong., 1st sess., H. Exec. Doc. 11. Washington: 1861. 18 pp.

Describes the destruction of the frigate Merrimack.

226. U. S. Navy Department. Letter of the Secretary of the Navy, Communicating. . . Information in Relation to the Construction of the Ironclad Monitor. 40th Cong., 2d sess., S. Exec. Doc. 86. Washington; 1868. 10 pp.

A letter of Gideon Welles, reporting to Congress on the "full history of the origin and construction of this memorable vessel," dated July 25, 1868.

227. U. S. Navy Department. Official Records of the Union and Confederate Navies in the War of the Rebellion. Washington: Government Printing Office, 1884-1904. 29 vols.

A collection of the documents, letters, and reports concerning the Navy in the Civil War. Material on the Monitor and the Merrimac can be found in the following volumes: 1st ser., IV-VII; 2d ser., I-III.

228. U. S. Navy Department. Report of the Secretary of the Navy in Relation to Armored Vessels. Washington: Government Printing Office, 1864. 607 pp.

The first forty pages are concerned with the Monitor-Merrimac engagement, printing mainly letters, telegrams, and reports of the action at Hampton Roads.

229. U. S. Navy Department. Naval Amphibious School, Little Creek, Virginia. Monitor and Merrimac; Re-enactment April 20-25, 1964. N.p.: (1964). 7 pp. (Cover title.)

Program of a re-enactment of the battle using the Amphibious Assault Evaluator at the U. S. Naval Base, Little Creek, Virginia. Contains a description of the battle.

230. U. S. Navy Department. Office of the Chief of Naval Operations. Naval History Division. Civil War Naval Chronology, 1861-1865. Washington Government Printing Office. (1961-1966). 6 parts.

Covers the day-by-day history of the ironclads, along with other events of the period; well-illustrated.

231. U. S. War Department. The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies. Washington: Government Printing Office, 1885-1902. 128 vols.

A collection of the official records of the Civil War. Material on the Monitor and the Merrimac can be found in the following volumes: 1st ser., II, IV-VI, VIII-XII, XIV, XV, XVIII, XXII, XXVI, L, LI, LIII, LX; 2d ser., II, III; 3d ser., I, II, V; 4th ser., I.

UNPUBLISHED MATERIALS

232. Allen Collection. Harvard College Library, Cambridge, Massachusetts.

Collection of pamphlets, magazine articles, relics, letters, and other manuscripts on the Monitor-Merrimac engagement.
233. Brock Collection. Henry E. Huntington Library, San Marino, California.

Three letters on the Monitor and the Merrimac, 1862-1874, and a diary of Hugh Burns (1861-1863), which mentions the battle, are included.
234. Brooke, George Mercer, Jr. John Mercer Brooke, Naval Scientist, Unpublished Ph.D. dissertation. University of North Carolina, 1955. 928 leaves.

Biography of the man who designed the rebuilding of the Merrimac.
235. Brooke, John Mercer. Papers. Private collection of George Mercer Brooke, Jr., Lexington, Virginia.

The papers cover the years from about 1830 to 1906.
236. Buchanan, Franklin. Letterbook, 1861-1863. Southern Historical Collection. University of North Carolina Library, Chapel Hill, North Carolina.

Valuable information relating to the Merrimac, including official reports to the Secretary of the Navy.
237. "Civil War, 1861-1865." Mariners' Museum, Newport News, Virginia.

Photostatic copies of newspaper articles, containing material on the battle.
238. Daly, Robert Welter. (The Battle of the Monitor and the Merrimac; an Historical Address Delivered March 9, 1862, at the Merrimack-Monitor Centennial Program, Mariners' Museum.) Mariners' Museum, Newport News, Virginia. 24 leaves, title supplied. (Processed.)

239. Eldridge Collection. Henry E. Huntington Library, San Marino, California.

Box 30 contains a three-page letter of H. B. Littlepage (November 28, 1876), discussing the battle. Box 25 contains numerous letters under the title "Monitor Correspondence," including letters of Gustavus Vasa Fox and John Ericsson.

240. Ellet Papers. University of Michigan Library, Ann Arbor, Michigan.

Collection of letters and other papers of Charles Ellet, Jr., an eminent engineer who warned the Navy Department about the danger of the Merrimac, and was later famous as a builder of steam rams on Western rivers.

241. Ericsson, John. Papers. American Swedish History Museum, Philadelphia, Pennsylvania.

242. Harbeck Collection. Henry E. Huntington Library, San Marino, California.

Includes one letter from Fox to Ericsson, January 8, 1865.

243. Jobson, J. Tyler. "Recollections of the Monitor-Merrimac Engagement as Seen from Pig Point."

U. S. Naval Academy Museum, Annapolis, Maryland. (Typewritten.)

244. Monitor (Ironclad). Log of the United States Ironclad Monitor. Navy Archives, Washington, D. C. (Photostats.)

245. (Monitor Papers.) U. S. National Archives. War Records Branch. Navy Section. Naval Records Collection of the Office of Naval Records and Library, Washington, D.C. Record Group 45.

The records of John L. Worden, and other material on the Monitor.

246. (Monitor Papers.) U. S. Naval Academy Museum, Annapolis, Maryland.

Several manuscripts relating to the Monitor, among them a "personal log" kept by her paymaster, William T. Keeler, 1862-1865, and a letter by Lt. Worden giving an account of the battle with the Merrimac.

247. Pierce Collection. New York Public Library, New York, New York.
- Collection of pamphlets, magazine articles, relics, letters, and other manuscripts collected by Frank H. Pierce. The correspondence with survivors was written so long after the events described that the accounts are unreliable.
248. Porter, John Luke. "CSS Virginia (Merrimack): The Story of Her Construction, Battles, etc." Mariners' Museum, Newport News, Virginia. 27 leaves. (Typewritten.)
- Includes photostatic reproduction of his letter relative to the conversion of the Merrimac into the ironclad Virginia.
249. Shankland, William F. (Private Journal.) Library of Congress, Washington, D. C.
- Journal of the commander of the U.S.S. Currituck, which escorted the Monitor to Hampton Roads.
250. Shoemaker, John J. "The Battle of the Merrimac and the Monitor." Mariners' Museum, Newport News, Virginia. 10 leaves. (Typewritten.)
- Typescript of a speech before the Confederate Historical Association of Memphis, Tennessee.
251. Still, William Norwood, Jr. The Construction and Fitting Out of Ironclad Vessels-of-War Within the Confederacy. Unpublished ph.D. dissertation. University of Alabama, 1964. 209 leaves.
- A scholarly study which is almost a sequel to Baxter (no. 10).
252. U. S. Ironclad Steamer Monitor, Designed by Captain John Ericsson, Built by Thomas F. Rowland, General Plan, Descriptive Sketch, and Contract. Mariners' Museum, Newport News, Virginia. 8 photographs.
- Photographic reproductions from the collection of George B. Bradley, Brooklyn, New York.
253. Welles Collection. Henry E. Huntington Library, San Marino, California.
- Three letters from G. V. Fox to Welles (1874) and one thirteen-page letter from Cornelius S. Bushnell to Welles (1877) are included.

254. Worden, John L. Papers. Lincoln Museum, Lincoln Memorial University, Harrogate, Tennessee.

Includes correspondence and a scrapbook. Some additional Worden material is in the Naval Historical Foundation Collection at the Library of Congress.

Part II

The Search for the Monitor

CHAPTER IV

"Monitor Found, Then Lost"

"Monitor Found Again"

Like the legendary "Flying Dutchman," often reported sighted but never brought into port, the first iron-clad warship constructed for the U. S. Navy periodically is reported located in its watery grave but never yet has a salvage team managed to make a line fast.

(News American July 22, 1973)

EDITOR'S NOTE

As the storm passed, the wind and sea subsided leaving no trace of the Monitor. Those who were aboard the two ships that stormy night and survived would never forget their narrow escape from a watery grave. Official reports were written by the commanders and a few of the crew recorded their versions in letters, newspapers, magazines, and at veterans gatherings. Studying these accounts, three points are readily apparent.

The first is that no single account tells the full story as there were simultaneous events and different perspectives. Secondly, no one was absolutely sure whether or not the Monitor had experienced structural fatigue or whether she sank because of only progressive flooding from under the turret and through the hawse pipe. Ericsson disclaimed a separation between the upper and lower hull to his dying day while Commander Bankhead, later supported by Engineer Stimers stated that there could have been a break because of shrinking green timbers. The third point is that the exact location of sinking was unknown. This was partially due to the state of the art of navigation and the stormy seas, but mostly due to the sudden crisis of abandoning an ironclad at sea and the following unrelentless series of calamities that haunted the crews.

The latter has been the subject of historians, explorers, treasure hunters and the like for over a century. Just as the

history of the famous little warship has enchanted school children, so has the dream of finding the lost ironclad enchanted would-be salvors.

This section of the manuscript will attempt to record the modern searches for the Monitor which have led to her discovery in the turbid waters off Cape Hatteras. No attempt met with singular success or failed to experience, frustration and defeat. The incomplete historical record and the environs of Cape Hatteras dictated this. Nevertheless, as John Newton of Duke University stated at the meeting at the Naval Research Laboratory on 11 March 1974, "The Monitor has been found." Much credit goes to this expedition for locating the hulk and bringing back the first photographs of the wreck, however, history must not fail to record the preceding and concurrent attempts which provided the background and much of the impetus to the Duke group. In addition, considering the number of people that have been involved in the "great Monitor sweepstake" as it was referred to by the Navy Supervisor of Salvage, and the number of hours spent studying and searching and the funds expended in total searching for the Monitor, glaringly points out the self-admitted "luck" of the Duke effort. Finally, what precedes must necessarily influence the future. Therefore, an historical perspective is sought so that the best interests of the Monitor and the nation might be served.

The editor will endeavor to fairly represent each attempt

in the light of history as to their background, participation, area of search, and their results. Most of the information has been gleamed from the "Monitor file" at the Division of Naval History or from contributions by the various participants. The story of the search is one of suspense, secrecy, and intrigue and any misstatement or omissions is the fault of the editor.

The story of the search begins where each individual attempt began, in the Official Records where the reports of the sinking are recorded and in the National Archives where the smooth log of the towing vessel may be found. Additional research uncovers several more accounts which outlines an area of ocean of approximately 500 square miles as a minimum from a mile north of the light house to 50 miles south. From this point, the individual investigator interpreted the events of 29 December 1862 - 3 January 1863 as best he could.

In the Official Records, Commander Trenchard of the Rhode Island and Commander Bankhead of the Monitor reported that the Monitor sank approximately 20 miles S.S.W. of Cape Hatteras. In a letter dated January 27, 1863 to the Secretary of the Navy, Commander Bankhead refined the position by stating,

As near as I could judge, making allowances for current, drift, and sea, we were about 25 miles south of Cape Hatteras, say in Lat. 34°50' North, Long. 75°30' West, depth of water 30 fathoms."

Francis Butts said in his account that the anchor struck in 60 fathoms of water. Watson, on board the Rhode Island

claimed that the Monitor sank southward and eastward fifty miles of Cape Hatteras. Keeler said in his letter that at the time of the sinking the Rhode Island was 8-10 miles east of the shoals. The last navigational fix before the sinking on board the Rhode Island was at 2045. Her log from then on is incomplete giving the investigator little information about how much headway they were making and how much drift they were experiencing until the Monitor sank at approximately 0130.

The first reported search for the Monitor occurred in May of 1950 when the U. S. Navy was testing a newly developed piece of equipment called the Underwater Object Locator (UOL) Mark 4. The tests were conducted in the area south of Cape Hatteras, in an approximate sinking position for the Monitor. No mention is made in the report of any historical research being done, however, someone must have been familiar with and interested in the sinking of the lost ironclad.

A Mr. Jim Elwood was aboard the test ship and is important as his name will reappear later in connection with another search attempt.

It is a matter of interest, that a letter was received by the Department of Archives and History, State of North Carolina, from a retired Lieutenant Commander Charles E. Landahl in November of 1968 and again in the spring of 1974 inquiring as to position of the "discovered" Monitor to the 1950 UOL position.

Unfortunately, in both instances, the locations differed.

This first reported search and subsequent searches point out that attempts to locate the Monitor were directly proportional to the advances in technology of underwater search. The edited UOL report follows.

FINAL REPORT ON PROJECT OP/S108/S68 (REVISED)

EVALUATION OF THE UNDERWATER
OBJECT LOCATOR (UOL) MARK 4
AS A MINE DETECTOR AND LOCATOR

Prepared and Submitted by
Commander Operational Development Force

Operational Development Force
U. S. Naval Base
Norfolk 11, Va.

ComOpDevFor
(90:koh)
S68
Serial 0554

26 September 1950

REGISTERED MAIL CONFIDENTIAL

From: Commander Operational Development Force
To: Chief of Naval Operations

Subj: Final Report on Project Op/S108/S68 (revised),
"Evaluate the Underwater Object Locator (UOL) Mark 4
as a Mine Detector and Locator"; submission of

1. The subject report is forwarded herewith.
2. Tests were conducted by the USS E-AMc(U) 11.
3. Unless otherwise directed this report will terminate the project and cancellation is requested.
4. When no longer required this report should be destroyed by burning. No report of destruction is necessary.

(Signed) M. E. Curts

CONFIDENTIAL

RESULTS AND DISCUSSION (Cont'd)

8. Location of large underwater objects (Test H)

a. To determine the ability of the UOL Mark 4 in locating large underwater objects, a search was made for the ex-USS MONITOR lost off Cape Hatteras in 1863.

b. Starting from its reported position of sinking, 34°50' N Lat, 75° 30' W Long, the search covered a considerable area and located only one large bottomed object. Its position, 34° 55.5' N Lat, 75° 24.5' W Long, coincided favorably with that last reported on the MONITOR. Depth of water was 50 fathoms.

c. Data taken from the UOL screen indicates that the large bottomed object is approximately 140 feet long by approximately 25-40 feet wide. This information compares favorably with the dimensions of the MONITOR.

d. Positive identification was not possible because the strong current running made it inadvisable to send a diver down to the depth required.

CONFIDENTIAL

U. S. S. E-AMc(U) 11
USN/USL Fort Trumbull
New London, Conn.

DIARY OF TEST P-70-H

Test P-70-H was conducted on 31 May 1950 in the vicinity of Cape Hatteras, North Carolina

AMcU-11 made a detection and location search of approximate position in which the ex-USS MONITOR was reported to have sunk in the year 1863.

A considerable area was covered and only one large bottomed object detected. This object coincided favorably with the located position of an object detected during August 1949, during the engineering evaluation of the Mark 4 UOL.

It is located at 34-55.5N, 75-24.5 W, in 310 feet of water. Data taken from the UOL screen indicates that the large bottomed object is approximately 140 feet long by approximately 25-40 feet wide. This information compares favorably with the dimensions of the USS MONITOR.

B/T data: 76 deg surface and down to 50 feet, 75 deg
at 50 feet and down to 175 feet

Sea; Moderate, long swells with some white caps

Wind: 8 - 12 knots

Ships speed: 6 knots

Bottom conditions: observed to be smooth, hard, sandy
and free of debris

Time: 0500 - 1600R 5-31-50

The Q81 sonar equipment was used to effect initial detection, at a range of 1700 yards. AMcU-11 closed to UOL viewing range for closer inspection:

U. S. S. E-AMc(U) 11
USN/USL Fort Trumbull
New London, Conn.

CONFIDENTIAL

Photographs were taken, some of which were rendered unusable due to an accident in the developing procedure at the Fleet Camera Party Laboratory.

The orientation of the sunken hulk can be plainly seen, as well as the approximate length and width.

EDITOR'S NOTE

No action or interest was generated by the UOL report within the Navy. It would not be until 1968 that the report was examined again for its content.

Of special importance, especially now that in 1974 the Monitor has been located, is the official abandonment of any claim to the wreck by the U. S. Navy. This leaves an interesting legal question that is yet to be solved, as to who legally can claim possession. There is slight evidence in the records that the Navy took this action to allow private enterprise to salvage the hulk if it was ever found and to disengage the Navy from any proposals for search and salvage.

The group of laymen referred to in the correspondence is in all likelihood the U. S. Monitor Foundation of Washington, D. C. headed at that time by Raynor T. McMullen, a retired postal clerk of Dundee, Michigan, who was offering a \$1,000 reward for anyone who could find and salvage the Monitor. Mr. McMullen is referred to in the text by Bob Marx which chronologically followed in 1955.

The U.S.S. Monitor, having been officially stricken from the Navy list by the act of abandonment is correctly referred to from this point on as just Monitor, dropping the U.S.S. title.

Op-43B2/ok
Ser 1707P43
8 Sep 1953

From: Chief of Naval Operations
To: Secretary of the Navy

Subj: USS MONITOR: recommendation for abandonment of

1. A group of laymen has expressed an interest in salvaging the wreck of USS MONITOR for the purpose of establishing the ship as a national shrine. The MONITOR foundered at sea on 31 December 1862, about twenty miles south-southwest of Cape Hatteras.

2. It appears that the Navy has no interest in USS MONITOR other than an historical one and is prepared to relinquish all claims to the ship. In order to legally dispose of any interest that the wreck under authority of Section 202(h) of the Federal Property and Administrative Services Act of 1949 (63 Stat. 385), as amended (40 USC Supp. V, 433(h)). To effect abandonment under said law, and in accordance with the provisions of Navy Property Redistribution and Disposal Regulation No. 1, it is necessary that the Chief of Naval Operations certify that USS MONITOR is not essential to the defense of the United States, and forward such certification, together with a recommendation that the vessel be declared abandoned, to the Secretary of the Navy for approval. Upon approval by the Secretary, the vessel does in fact become abandoned.

3. It is hereby certified that USS MONITOR is not essential to the defense of the United States, and it is recommended that USS MONITOR be declared abandoned.

ROBT. B. CARNEY

30 SEP 1953

FIRST ENDORSEMENT on ltr CNO to SecNav Ser 1707P43 dated 8 Sep 1953

From: Secretary of the Navy
To: Chief of Naval Operations

Subj: USS MONITOR: recommendation for abandonment of

1. In view of the report and certification set forth in the basic letter, and inasmuch as the Department of the Navy has in fact long since abandoned such vessel, a formal declaration of such abandonment is hereby made.

2. Returned for appropriate action.

s/ R. H. FOGLER
R. H. FOGLER
Assistant Secretary of the Navy

31 Jul 1953

MEMORANDUM for the Judge Advocate General

Subj: USS MONITOR - Salvage of

1. The attached letter to Mr. Stanfield S. McClure, prepared in Division VI for your signature, advises Mr. McClure that the Navy would be able to entertain his request to salvage the MONITOR and establish the ship as a national shrine if his committee should be organized into a non-profit association and request donation of the vessel under Public Law 649, 79th Congress, 34 U.S.C. 546f.
2. Public Law 649, supra, authorizes the Secretary of the Navy to transfer by gift or otherwise obsolete or condemned vessels of the United States to any of the several States, Territories, or possessions of the United States, and political subdivisions, or to corporations or associations whose charter or articles of agreement denies them the right to operate for profit. It requires that before such transfer takes effect, information of the proposal to make such transfer must be transmitted to the Congress and that the transfer shall take effect upon the expiration of the first period of sixty calendar days of continuous session of the Congress following the date on which information of the proposal to make such transfer is transmitted to the Congress, provided that during this 60-day period no objection to the transfer is made by the Congress. The law also requires the transferee to enter into an agreement to maintain the vessel in a condition satisfactory to the Navy Department and that no expense shall result to the United States as the result of the transfer or of the terms and conditions imposed by the Secretary of the Navy.
3. It is not believed that Public Law 649 was intended to cover the transfer of the wreck of a vessel, especially where the possibility of salvage is uncertain. While the MONITOR is unquestionably obsolete it is more aptly described as a wreck and the statute does not include the term wreck. Moreover the provisions of the law do not lend themselves satisfactorily to this situation. The transfer of a vessel undoubtedly means the physical transfer of a vessel in the possession and under the control of the Navy, and not an interest in a vessel which is not in the possession and under the control of the Navy. It is not believed that any association would want to incur the expense of salvaging a vessel unless they were assured in advance of their right to possession if successful in the salvage operations. This

the Navy could not do under Public Law 649 without notifying the Congress of the proposed transfer of the vessel in advance of the salvage operations. Moreover, if the transferees were unsuccessful, the right to the vessel would have been transferred and neither the Navy nor any other person would have a right to attempt salvage work if the transferee failed. A transferee could not agree to maintain the vessel in a condition satisfactory to the Navy prior to successful salvage.

4. These obstacles could probably be overcome by notifying the Congress of the proposal to transfer the vessel to the applicants if they were successful in salvaging her within a specified time and by having the transferees agree to maintain the vessel in a condition satisfactory to the Navy provided they were successful in salvaging her. The transfer could also be made contingent upon the successful completion of salvage operations within a certain period of time.

5. If it should be decided to invoke Public Law 649 in this case, no one would be likely to question the transaction if the Congress raised no question within the 60-day period. The above comments are made, however, to show the reasons why it is considered that Public Law 649 was not designed for this situation.

6. In the attached memorandum for the Assistant Judge Advocate General dated 2 July 1953, this Division recommended that the applicants be referred to the Treasury Department as was done in the case of the Submarine G-2 (JAG memo to CNO dated 12 March 1953). It was considered that the disposal of wrecked or abandoned property of this nature has been placed specifically under the jurisdiction of the Treasury Department by section 3755 Revised Statutes (40 U.S.C. 310). This statute authorizes the Secretary of the Treasury to make such contracts and provisions as he may deem for the interest of the Government, for the preservation, sale, or collection of any property, or the proceeds thereof, which may have been wrecked, abandoned, or become derelict, being within the jurisdiction of the United States, and which ought to come to the United States.

7. As far back as 1900 the Attorney General held in an opinion to the Secretary of the Navy that section 3755 Revised Statutes does cover wrecks of vessels belonging to the United States or abandoned by private owners where they are located within the jurisdiction of the United States. (23 Ops. Atty. Gen. 76.)

8. According to the attached letter from the Chief of Naval Operations of 15 June 1953, no more exact information as to

the position of the MONITOR is available than that furnished by Mr. McClure that she is "about twenty miles S.S.W. of Cape Hatteras." Inquiry was made of the Treasury Department as to the interpretation that Department places on the term "within the jurisdiction of the United States" contained in section 3755, Revised Statutes. Mr. Nussear, of the Bureau of Accounts, advised that the General Counsel of the Treasury Department had written an opinion on this matter several years ago and concluded that the term meant within the continental limits of the United States and extends only three miles so far as the coastal waters of the United States are concerned. He said that under this opinion, the Treasury Department would hold that it had no jurisdiction if the MONITOR is in fact about twenty miles S.S.W. of Cape Hatteras.

9. There would therefore be no object in referring Mr. McClure to the Treasury Department.

10. As stated above, there is no serious objection to the action as prepared, nevertheless it is considered that Public Law 649 is not really applicable and that its use in this case would constitute an undesirable precedent for future similar situations. It is considered that since section 3755 Revised Statutes cannot be invoked in this case, rather than attempting a transfer under Public Law 649, it would be more appropriate for the Navy officially to abandon the wreck of the MONITOR under authority of section 202(h) of the Federal Property and Administrative Services Act of 1949 (63 Stat. 377, 384), as amended (40 U.S.C. Supp. V, 483(h)), and to so notify Mr. McClure. He and his associates would then acquire title to the wreck if and when they salvaged it, but not otherwise.

Very respectfully,

(Signed) JOHN OWEN

ABANDONMENT.

a. General. This Paragraph pertains to vessels and service craft, which shall be deemed to include floating equipment and floating construction equipment, belonging to the Department of the Navy, which have not been formally abandoned in accordance with Par. 303 or 605-3, but which are of no apparent use or value to the Navy and, for all intents and purposes, appear to have been abandoned for a period of seven or more calendar years. All such vessels and service craft shall be declared abandoned, and such abandonment shall be deemed authorized under this Paragraph, whenever the value of the property is so little or the cost of its salvage or rehabilitation is so great that its retention for use or advertising for bidding and sale or donation to a public body, would clearly not be justified. This Paragraph shall NOT be considered as instructions for conducting surveys in an effort to locate such property, but is for the purpose of expediting disposal action when such cases are brought to the attention of the Department by interested individuals, companies or Federal agencies, or when it is considered advantageous to the Department to formally renounce all claim to the vessel or service craft. However, nothing herein shall preclude the Navy from offering such vessels for sale when such action is considered to be economical.

b. Procedures. When inquiries arise as to the status of a particular vessel or service craft, the District Commandant or appropriate commander shall appoint a reviewing authority for the purpose of determining the material condition of such vessel or service craft, if it is in abandoned status but has not been formally abandoned by the Department. A report covering such information as identification, location, classified material and equipment on board, material condition and recommendations, shall be forwarded by the District Commandant or appropriate commander concerned to the Chief of Naval Operations, with a copy to the cognizant bureau. If readily available, with respect to a vessel or service craft built by or for the Navy, the Navy contract or project number should be included, if available. Upon receipt of a copy of the report, the cognizant bureau shall advise CNO whether the vessel or service craft is usable or can be economically rehabilitated for use, or whether the commercial value is considered sufficient to warrant conducting a sale. If it is determined that sale of the vessel or service craft would be advantageous to the Government, the Chief of Naval Operations shall take action to effect its disposition in accordance with Par. 428-4 or 5, as appropriate. If it is found that the vessel or service craft is of so little value or the cost of its

salvage or rehabilitation so great that its retention for use or advertising for bidding and sale, or donation to a public body would clearly not be justified, the CNO shall recommend to the Secretary of the Navy that the vessel or service craft be declared abandoned. In the event CNO previously had not certified that the vessel or service craft was not essential to the defense of the United States, such certification shall accompany the recommendation for abandonment. Upon approval of this recommendation, CNO shall instruct the District Commandant or appropriate commander to remove all material and equipment of a classified nature, plus other material and equipment for which a need exists and which economically can be removed, and to proceed with disposal in accordance with Par. 303, or 605-3 if located in a foreign area. In no case shall any vessel or service craft be abandoned in such a location as to result in a hazard to navigation, public health, or safety. If it is found impracticable for the District Commandant or appropriate commander to remove classified or needed unclassified material and equipment prior to any private salvage operations, any notifications of abandonment shall state that the Department of the Navy reserves all rights to reclaim and remove all such material and equipment prior to, during, or after salvage operations. In cases that necessitate the removal of classified matter after salvage operations have begun, the District Commandant or Area Commander shall appoint a representative to assure that all such material is removed and handled in accordance with applicable security directives.

EDITOR'S NOTE

The Marx account of discovery in 1955 is perhaps one of the most interesting and one that had generated the most excitement prior to the actual confirmed discovery of Monitor in the spring of 1974.

Robert Marx was at the time a Corporal in the U. S. Marine Corps, stationed at Fort Lejeune, North Carolina. Excerpts from his book, Always Another Adventure are included as the story is best told in his own words.

Always Another Adventure

By

Robert F. Marx

I was determined to be scientific in this underwater sleuthing, so that by the time I joined the Marine Corps I already had a large wreck file full of information gleaned from newspaper articles, hydrographic charts, history books, and naval records—and of course books on sunken treasure itself. It didn't take me long to discover that Camp Lejeune was only a twelve-hour drive from an area I had picked out as one of the most promising hunting grounds in the United States—Cape Hatteras, North Carolina, sometimes called the "Graveyard of the Atlantic" because of the more than two thousand ships that over the centuries have either foundered close by or been wrecked on its treacherous shoals.

Cape Hatteras is no diver's paradise. The same nasty weather, strong currents, and shifting shoals that have earned it such a bad reputation with seamen help to guard those two thousand-odd wrecks from would-be salvagers. Our first two weekend expeditions were a total loss, since on both occasions such a gale was blowing that no one was willing to take us out. Even on the "good" weekends on which we were able to get in the water, the wind never fell below twenty knots, and in most places we had to work in a six- or seven-knot current with visibility no more than ten feet, at the most.

Not that this discouraged me: half the thrill was in the search itself, and, strangely enough, my most interesting diving venture during my Marine Corps days had nothing to do

with a treasure at all. One evening, late in the summer of 1954, when I was having supper at Captain Legge's quarters, he said: "Bob, why don't you find the Monitor?" I told him that I had heard many tales about it on my various trips to the Outer Banks and was interested in its history as the first American ship specifically designed as an ironclad, but couldn't see wasting my time trying to locate a wreck that had no treasure, but only historical value.

Captain Legge argued that it wouldn't be a waste of time, since if I found and raised the Monitor, I could write my own ticket in the salvage business when I left the Marine Corps. I still wasn't convinced. Then he started talking about what a challenge it would be, how people had been intrigued by the mystery of the Monitor's whereabouts almost since the day she went down, how I would be doing a service for my country, and by the end of the second after-dinner brandy, I was more enthusiastic than he was.

The Monitor (also known as the "Yankee Cheesebox on a Raft") was a Federal ironclad that had defeated the Confederate Merrimac at Hampton Roads, Virginia, on March 9, 1862, a battle that probably did little to affect the outcome of the Civil War but which marked a new era in the history of naval warfare, since it was the first in the world fought between two ironclad ships. On December 29, 1862, the Monitor was towed out of Fort Monroe, Virginia, by a paddle steamer, the

Rhode Island to help blockade the Confederate-held port of Charleston, South Carolina. The Monitor, built so low in the water that her decks were usually awash and only her circular gun turret amidships was visible, was well designed for a battle in calm, protected waters, but she was not very seaworthy. During a storm off Cape Hatteras on the night after leaving port, she developed a leak at about the same time that the towline parted. At the sign of a rocket flare from the Monitor, the towship Rhode Island lowered lifeboats, rescuing all but sixteen of the crew, but when they returned for the rest they were unable to locate the low-lying vessel in the darkness and high seas. It was assumed that the Monitor had sunk, and the Rhode Island continued on to Charleston alone.

After reading all the books on the Monitor I could lay my hands on and seeing that no two of them agreed on where she had sunk or even her position when the towline with the Rhode Island had parted, except that it was in the general vicinity of Hatteras anywhere between ten and thirty miles from shore, I decided to do some original research on the subject. As soon as I could get a week's leave, I went to Washington, D. C., and started to track down information, mostly in the Library of Congress and the National Archives. Searching through the original log of the Rhode Island, I found that the captain estimated his position at twenty-one miles from the Cape Hatteras lighthouse when the Monitor

disappeared. However, that still left a huge area to be covered, since there was a very strong onshore current running at the time, which might have carried the foundering Monitor with it.

On my way back to Camp Lejeune I made brief stops at several of the fishing villages on Hatteras Island, and nearly all the old salts I spoke to claimed that they had heard from their fathers or grandfathers that the Monitor lay fairly close to the Hatteras Lighthouse. I didn't put much stock in these tales, since I was trying to be scientific in my search, but when I saw Captain Legge at the base and told him what a lost cause I thought it was, he urged me on and suggested that I return and pump the local fishermen for more clues. They can often be more helpful than all the documents put together, he said, and I have since learned this to be true.

The next weekend I was back in Hatteras again, and one of the old seamen, a retired captain named Gray, who heard me asking about the Monitor, said he might have something that would interest me. Inviting me to his house, he pulled out an old family ledger in which births, deaths, marriages, and other events were recorded. One of the items was about a family picnic held on the beach near Hatteras Lighthouse one Sunday in early January 1865—only two years after the Monitor had disappeared—and mentioned that they had seen the "Yankee Cheesebox on a Raft" in the breakers right off the lighthouse.

That was all I needed. After arranging to charter a fishing boat for the following weekend, I rushed back to share the news with Captain Legge and to call a special meeting of the diving club to ask for volunteers to help in the search. Over 150 raised their hands (and there would have been more, but I was about the only pampered Marine on the base who could get liberty every weekend), so that we had to pick forty names out of a hat.

That next weekend, like the ten or twelve that followed, brought no success: a total of two hundred divers spent over twenty-four hundred hours in those cold, rough waters covering every inch of the bottom from the shoreline to a distance of five hundred yards out and for two miles each side of the lighthouse, without finding one sign of the Monitor. The weather got colder and the sea rougher as winter set in, and I finally had to suspend operations. It was foolish to risk the club members' lives when it had become obvious that the Monitor just wasn't where I had been led to believe it was.

Once more Captain Legge urged me on, persuading me to give it one more try. I took another week's leave in January 1955 and returned alone to Hatteras in search of more clues. My first task was to make sure that the lighthouse was the same one mentioned in the Gray's family record book. It wasn't; but it was built only two hundred yards from the old site, and this made little difference since we had searched

up and down the coast for two miles on either side of the new one.

I decided to make another search off the lighthouse, on the off-chance that we had missed an area before. In my first attempt to get a small rented skiff through the heavy surf, it overturned, ruining the outboard motor, and after paying \$75 damages claimed by the owner, I was left with exactly \$4.83 for the rest of the week. Room and board were no problem—I just slept on the beach and traded fish I speared for hot meals from some of the Hatteras villagers—but now I couldn't afford to rent even a skiff. Too stubborn to quit, I decided to work without one. This meant fighting my way through the breakers wearing a seventy-five pound double-tank aqualung and other heavy equipment, back in through the breakers when I ran out of air, and then out again with a new set of tanks, making about four or five excursions a day. Dozens of people gathered on the beach to watch, telling me what a nut I was every time I crawled out of the water to change tanks. But I had to be grateful for their presence: on two occasions when I was swept out to sea by strong currents, spectators rushed to the nearby Cape Hatteras Coast Guard station, and a lifeboat was sent out to rescue me.

By the end of the week I had nothing to show for my efforts but dozens of cuts and bruises from being battered around by the big breakers, and a case of pneumonia from

sleeping on the cold beach, which put me in the base hospital for two weeks. That seemed the end of the Monitor business, but a piece of valuable information turned up that set me off on my search again. One of the club members came to visit me in the hospital one day to tell me that he had been reading through an old atlas, published in 1870, and had noticed that the location of the Cape Hatteras Lighthouse, about a mile back from the shore line at that time, did not tally with its present location, only twenty or thirty yards from the high-water mark. As soon as they let me out of the hospital I went up to Raleigh to check out this new lead. Other old maps and charts also placed the lighthouse about a mile inland, and several state geologists I consulted confirmed that the coastline of the Outer Banks in the Hatteras region had receded almost a mile in the last hundred years. In fact it would have receded even farther, they said, if dune grass had not been planted during the 1930s to cut down the erosion from the strong currents and surf. This meant if the Monitor had been in the breakers when seen by the picnickers in 1865, it would be a mile offshore today.

Returning to the base, I found still another valuable lead waiting for me in the mail. Reading in some history book that the Union 20th Indiana Regiment had been stationed on Hatteras at the time the Monitor was lost, I had written to the Indiana State Historical Society asking if there were any regimental records existing from that period, and the

society sent back photostats of the regiment's record book for a month following the Monitor's disappearance. Pay dirt again. Two days after the Monitor had gone down, some soldiers had found five bodies of her crew washed ashore near the lighthouse, and the bodies had been buried near a large cedar tree on a high knoll a half mile behind the lighthouse.

Back again at Hatteras the following weekend, I easily located the knoll, as well as the stump of a long-dead cedar tree. Then searching through the bushes for signs of a grave, I stumbled upon a large hole with many stones lying about. Since Hatteras is pure sand, I figured that the stones must have been brought there—perhaps to cover over a grave—and began to scoop away the sand eagerly with my bare hands. A twig snapped behind me and I turned to find myself staring into a rifle barrel held by an elderly man who demanded, "What are you doing trespassing on my property?" As I explained to him what I was looking for, he lowered his rifle and said in a friendly tone, "That's very interesting. Come up to the house for a drink and tell me about it."

Entering his house, or cottage, I could scarcely believe my eyes: The walls of the small living room were covered with drawings and paintings of the Monitor, as well as a large chart of the Cape Hatteras area, showing the different positions where the Monitor had been reported lost. On it a spot about a mile off the lighthouse was marked with an "X" in heavy red ink and the words, "Here is where I found her."

My host, I soon discovered, was Mr. Ben Dixon MacNeill, a retired journalist and an amateur historian who had devoted most of his life to studying the Civil War, mainly the history of the Monitor. Somewhat of an eccentric, he lived alone and was considered a crazy hermit by the local people, since he rarely went out, spoke to no one, and kept a fierce dog tied at his gate to discourage visitors, which is why, I suppose, no one had directed me there during all that time I had been asking about the Monitor.

After we had been talking for awhile, MacNeill took a small box from a drawer and, handing it to me, said, "Is that what you were looking for?" Inside were buttons and five belt buckles from Union naval uniforms from the Civil War period. "I dug that grave up several years ago," he continued, "and verified that the five Monitor crewmen had been buried there. I also knew all five bodies had been washed ashore at the same spot and I realized that the Monitor had to be close to the shore or the bodies would have scattered. With that idea, I started my air search. That was twelve years ago. During the first six years I made seventy-five flights without spotting her, but on the seventy-sixth, I finally did. Since then I've made about twenty more flights, but I've only seen her six times, because the water gets dirty sometimes and sometimes she gets covered over with sand."

I sat there absolutely flabbergasted, not knowing whether to believe him or not. It seemed impossible that this recluse

could have found the Monitor without someone knowing about it, and no one in Hatteras had ever mentioned it to me. Yet his facts and the position he had marked certainly jibed with what I had learned. As if reading my mind, he said: "You don't believe me, do you?" I said that I did though it was difficult, and he invited me to visit him again, which I promised to do, providing it was all right with that huge dog at the gate.

Back in Hatteras village, I asked many of the people I knew about MacNeill's story. They all said that they had heard him make some noise about sighting the Monitor from the air, but that since three different diving expeditions financed by some Yankees had ended in failure, they assumed that MacNeill had invented the whole thing.

I made several other trips back to visit MacNeill, each time bringing him several bottles of whiskey and boxes of food—he looked half-starved and I certainly didn't want the old man to die, at least not before he helped me locate the Monitor. He refused to tell me her exact position and had prudently taken the chart from the wall after my first visit so that I couldn't get a good fix from land features. The press, he said, had criticized him so badly after the last major expedition (sponsored by some retired mailman from Michigan) that he didn't want to go through the same thing again if I failed to locate her. I finally persuaded him to help me by promising that we would work in complete secrecy:

if we were successful, then he would have the last laugh at his newspaper critics, and if not, no one would know the difference.

We agreed to mount a small-scale expedition that would not attract too much attention and decided upon June (1955) as the most likely month for (relatively) calm, clear water —although you can never count on Hatteras weather. MacNeill would provide a plane for spotting the Monitor from the air, or rather borrow it from his nephew who happened to own one, and I would furnish all the diving equipment. MacNeill let the sheriff of Hatteras village in on our secret too, because he had been helpful before (and also backed MacNeill's story claiming to have seen the Monitor twice from the air himself), and he promised to loan his dory with an outboard motor as a diving tender.

In order to insure secrecy at my end, I told no one on the base about the expedition except the Legges and one of the members of the diving club, whom I asked along to help —Donald "Andy" Anderson, the best diver in the club and, most important, very close-mouthed. I also at the last minute told my girl friend, a woman Marine named Marcia, and this turned out to be a mistake.

Andy and I arrived at Hatteras on June 5 in a station wagon loaded with equipment and found that MacNeill had everything ready; he had even managed to get us a free room in a comfortable motel, although we had been expecting to camp

out on the beach. The following day we began our search, even though—June or no June—the seas were enormous and the water very dirty. Andy rode in the plane to search for any signs from the air, while the sheriff and I cruised below in the dory. Whenever Andy saw any dark spots that might be the wreck, he dropped a weighted float from the plane and we maneuvered over to the spot so that I could dive down and investigate. Each time it turned out to be only a dark patch of seaweed on the bottom—except once, when it was a school of menhaden, so closely packed together that I was almost able to walk over them to get back to the dory.

We spent all that day and the five days that followed in the same tiring work. It was tiring not only for me but for everyone, including MacNeill, who directed the plane's searches from the beach with a walkie-talkie I had borrowed from the base. Our tempers grew shorter with each day of fruitless searching, especially MacNeill's, who faced the prospect of still another fiasco and by the evening of the sixth day he was in a real state, calling all of us blind, incompetent nitwits. Then came the last straw. Toward sunset a light plane landed on the highway near the lighthouse (which we also had been using as an airstrip), and out stepped my friend Marcia and Larry Holland, a friend of mine who was assigned to the Camp Lejeune newspaper. Deciding to pay me a little visit, Marcia had persuaded Larry, who saw a chance for a good story, to fly her up to Hatteras. It was the end

of our joint expedition. As soon as Marcia introduced Larry as a reporter from the base newspaper, MacNeill flew into a rage, accusing me of breaking my promise of secrecy and denouncing us all as "Marine Corps publicity hounds." He stalked off, and I followed, trying to explain what had happened, but I have to admit that the whole thing looked like a double cross, and all MacNeill would say was that he was withdrawing from the venture and that I was on my own.

I was so furious with Marcia and Larry that I could have strangled them on the spot, but I realized that I now had no plane, except Larry's, and I persuaded him to stay for the weekend and help out. The next day's search was no more successful than the previous ones, even though Larry and Andy were able to get very close looks—every time the single engine died out on the lower octane automobile gas, which was all we could get in Hatteras. But by evening the water was getting much calmer and clearer, and our hopes rose again.

I went to see MacNeill that night to try to patch things up but got no farther than his gate. He threatened to turn his dog loose if I didn't leave his property, so that was that. I was determined to find the Monitor, with or without MacNeill.

On Sunday morning, June 12, Andy went up on his thirty-eighth flight of the week. The sea was almost flat calm, and the water so clear that I could look over the side of the dory and see bottom thirty feet down—remarkable for Hatteras.

Suddenly Larry banked the plane sharply and came toward us, making several low passes and wagging the wings. At first I thought that the plane was in trouble again, but then I saw Andy's arm sticking out and waving me toward shore. I was so impatient that when the sheriff couldn't start the outboard motor immediately, I dove in, swam to shore, and ran to the highway just as the plane was taxiing to a stop.

Andy jumped down, shouting above the engine, "Marx, Marx, we saw it, we saw it! Get in, you'll see it too!" I climbed in quickly, practically knocking Andy over with a passing thump on the back. Larry gunned the motor, and we careened down the highway, when suddenly we heard a sickening crunch from the right wing and jolted to a stop. Neither of us had noticed a high road sign or heard Andy's shouts of warning. It looked as if only the wing fabric was torn, so we jumped in again—after removing two more signs farther ahead—and took off.

Once airborne I saw that the water was clearer than I had ever imagined it could be around Hatteras. Larry flew out several miles to sea to gain altitude, and I saw wrecks lying all over the bottom like toy boats in a bathtub. Then he turned and headed for the site. I was so excited I could hardly breathe. At exactly 11:15 A.M. I saw the Monitor for the first time. There was no mistaking her: the dark oval outline of her hull, the circular gun turret amidships, and the smaller square pilothouse in her bow were all clearly

visible. Larry made several passes over the spot until the engine started to cough and sputter badly, and I asked him to go over just once more so that I could throw out a buoy marker—a ten-gallon can attached to a concrete block. The block plummeted straight down, but the lighter can was carried against the paper-thin fuselage, tearing a hole large enough for a person to crawl through. By this time the engine had died out completely, and Larry said he would have to land on the beach.

Leaving Larry to replace the rear wheel that had been knocked off by a piece of driftwood as we landed, and patch up the fuselage and wing, I rushed to the motel to get more buoys—the first one had landed to one side, and also there was danger of its being torn loose in any heavy seas. Andy and I loaded the dory with more buoys, and although we couldn't see the Monitor from the surface, I had made a rough fix from landmarks I had noted from the plane and laid out a number of markers in the area. Returning to the beach for our gear so that we could rush back and dive on the Monitor, we found MacNeill waiting for us with that same old rifle.

"So you found her," he said, "Well, she's mine, and you aren't going to dive on her, even if I have to shoot you."

Luckily, several of the local people were standing around, and they grabbed the rifle from him. Then he burst into tears. I really felt sorry for the old man—I had spent a year looking for the Monitor, but he had spent most of his life—yet

no amount of arguing would get him to accept my offer to work together again. Then, as I was standing there arguing with him, the sheriff came up to tell me that he would be needing his dory and motor for something else and couldn't take us out again.

The whole Monitor business was beginning to look like a bad dream, and to make matters worse I soon had what I thought was positive proof that I was cracking up as badly as MacNeill. Returning to my motel room exhausted, I flopped on the bed and must have dozed off after dropping a dime in the motel radio for an hour's music. Suddenly I woke up to hear: "This is Monitor calling. Beep-bup-beep-a-rup. Monitor calling." Then silence. I was ashamed to say anything to Andy and the others and only weeks later learned that NBC radio had started a new weekend program that same day, called "Monitor."

I found Marcia, Larry, and Andy on the beach trying to get the plane in shape to fly back to the base. After we helped patch the torn fuselage and wing with parts of the Sunday newspaper and refix the rear wheel with bits of wire, Larry declared her ready to go. I was a little more skeptical and later learned that they had barely made it back: the right wing spar had been broken when we hit the road sign, although it fortunately waited until they touched down at the base air strip to fall off altogether.

But Andy and I were too excited about the prospect of

diving on the Monitor to worry about anything else, and as soon as they took off we raced back to the village to rent one of the dozens of boats tied up at the Hatteras dock. No business; they were all "needed for something else," too. By the time we had scouted all the five other villages on Hatteras Island with the same luck, we began to wonder what was going on. Finally, someone told me MacNeill had been around threatening to shoot the first person who loaned or rented us a boat. Maybe that was it, or maybe they just naturally sided with one of their own people against outsiders (and Yankee outsiders at that), but whatever the reason, we were at a dead loss. There we were with the Monitor located and all we could do was sit on a sand dune and stare out at our buoys, floating on the still incredibly calm sea, and make periodic trips to the dock to offer the local fishermen double, triple, or whatever they wanted to charge to take us out. At the end of the week we finally packed up and drove back to the base in disgust.

Marcia and Larry had already spread the word of our discovery, figuring, I guess, that the damage had already been done with MacNeill and that real publicity could not make it any worse. News items had appeared all over the United States and in some foreign countries as well (we had been completely unaware of all this, since we had seen no newspapers at Hatteras and no one there would talk to us), and I was summoned to see the base commander, Major General Reginald Ridgely,

who had replaced my old friend Chesty Puller. He was very interested in the discovery and ordered me to go to Washington to tell my story personally to the Secretary of the Navy. He, too, was very interested, but I failed to convince him that the Navy should send a barge to salvage the Monitor. In fact, almost everyone in Washington took a keen interest in my discovery, except for a few skeptics in the press who labeled me as a fraud. Perhaps that is why the Navy and the Smithsonian Institution, which I also went to for help, were reluctant to give me any direct backing. Everyone suggested that I go back to the Monitor and either get a good photograph of her on the bottom or pull off something that would prove her identity. But no one was willing to supply either the money or the boat I needed for such a project—that is, until the editors of Life magazine saw the possibility of a good article.

Several days after I returned to Camp Lejeune, a Life reporter named Clay Blair appeared and announced that Life was prepared to finance an expedition back to Cape Hatteras to photograph the Monitor underwater. Clay, like any good reporter, was also skeptical of my claim and we didn't hit it off very well at first, but eventually he became as enthusiastic about the Monitor as I was, and the Monitor became the first in a long series of projects we were to collaborate on closely.

The Marine Corps was generous enough to give me all the

time off I needed from my regular diving duties, and because Andy Anderson had been transferred to Japan while I was in Washington, General Ridgely gave another member of my diving club, Lieutenant Keith Ingram, permission to be my new assistant.

The three of us—Clay, Keith, and I—arrived at Hatteras on July 8. At first we found the atmosphere as hostile as when Andy and I had left a few weeks before, but the unlimited amounts of money that Life was prepared to pour into the project soon overcame any fear of MacNeill's rifle. At Hatteras village we were able to charter a sixty-four-foot shrimp boat, the Sterling, for about three times the price our diving club had paid on previous expeditions, but the owner claimed that it was the hurricane season and he was taking a serious risk going out at all. I tried once again that same day to reach an understanding with MacNeill, but he would have none of it, and I decided to give up and ignore him from then on.

When we cruised out to the Monitor site the next morning, we found that all the buoys we had left were gone—probably torn loose during a recent gale that had lashed the area for over a week, although we were prepared to suspect that MacNeill had had a hand in their disappearance. We dropped out more buoys in a grid pattern covering a large area that I plotted from bearings I had taken before, and began to cruise back and forth with the fathometer running, as we had done to locate the two German submarines. The

Sterling's fathometer was not very sensitive, but we figured that it was good enough to find the large hulk of the Monitor, especially since I was sure I had put us within five hundred yards of her either way.

All day long we kept obtaining a reading near the southeast corner of the grid. It seemed too small to be the Monitor, but after spending all day without finding anything else, I decided to check it out in the late afternoon. We dropped anchor, but the seas were so heavy that by the time I had strapped on all my equipment the anchor had dragged considerably, and my fifteen-minute search on the bottom revealed nothing but sand and seaweed.

Clay telephoned the managing editor of Life that evening and told him that none of the fathometers on the local fishing boats was very sensitive, but we had heard that several Coast and Geodetic Survey vessels with very refined equipment were working in the area. The editor exerted a little pressure that same evening, and by the following morning the Stirni, a 110-foot vessel with the latest electronic detection gear, was on its way to aid us.

We met the Stirni at the site where our grid pattern was laid out and were welcomed aboard by Commander C. R. Reed, who was very eager to help us, since their specialty happened to be locating wrecks to plot on navigational charts. They decided to use their fathometer first, and then, if that didn't produce results, the sonar, which is the best

wreck-locating device but not always effective in shallow water close to shore. The only reading produced during the fathometer runs that could possibly be a wreck was over the same spot on the southeast corner of the grid where we had picked up an outline the day before. We anchored, and moments after the sonar was turned on, the operator reported a positive metal contact. We plotted his bearings on a chart and again it was that same spot the fathometer had indicated.

Clay, Keith, and I figured that this was enough evidence that the Monitor or at least some wreck was down there and wanted to rush back to the Sterling so that we could check it out. But Commander Reed said that, since his boat and the other two Coast and Geodetic Survey vessels had to leave for Norfolk the following day, he wanted to make certain that there were no other wrecks in the general vicinity which we could check if this contact turned out to be something other than the Monitor. He radioed the other two vessels to join him, and later that afternoon they set up draglines to sweep the bottom for any other wrecks or obstructions. The only snag occurred in the same spot as the fathometer and sonar contacts, and by then we were all convinced that it was the Monitor. It was already dark by the time the last sweep was completed, so we decided to anchor the Sterling for the night and accepted the comfortable bunks Commander Reed offered us aboard the Stirni.

As soon as it was light, a boat was lowered to drop a

buoy directly over the spot that had given the sonar contact, and after thanking Commander Reed and his crew, we rushed back to the Sterling to move her over the site. At 0812 I was over the side. I swam to the buoy line and pulled myself down hand over hand to keep from being swept away by the swift current.

Reaching the bottom forty-five feet down, I expected to see the whole outline of the Monitor as I had seen her from Larry's plane; instead, about ten feet in front of me I spotted a gutter-like depression running in a slight curve across the bottom—the kind of depression made when a strong current scours the sand away from the lee side of a buried object. Digging my hands deep into the sandy bottom to brace myself, I half swam, half pulled myself toward it. Soon I was able to make out a large metal bulkhead sticking three or four feet out of the sand, and by holding on to the rim and working my way around, I discovered that it was a circle about twenty feet in diameter. After all the hours I had spent during the previous year poring over blueprints and drawings of the Monitor, I knew that this could only be the Monitor's round gun turret. I dug down farther in the sand and found the two gun ports right where they should be, but my hands were so numb from the cold that I couldn't tell whether they were closed or only filled with sand.

My air was running low, so after circling the gun turret once more, I headed up. Surfacing about fifty feet seaward

of the Sterling, I shouted that right below me was the Monitor's turret, and Clay tossed over a buoy, while Keith swam over with a line, since I was losing way against the current.

Back aboard, as Keith strapped on his diving gear, I quickly changed tanks, putting on a brand new one that Clay had bought in a small town on the way up from the base. Holding on to the new buoy line Clay had placed, Keith and I landed squarely on top of the turret, where the buoy anchor rested—Clay had scored a bull's eye. Our plan was to search out from the half-buried turret and determine if any other part of the Monitor was sticking out of the sand. We started to follow the gutter-like line toward the spot where I estimated the small pilot house would be in her bow, when I began to feel dizzy. I drew a deep breath from my mouthpiece to make sure that the air was flowing properly and noticed that the air had a foul taste. My head whirled more and more; then I felt a sharp pain in my chest. Spitting out the mouthpiece, I pulled the emergency cord on my life vest and felt myself flying to the surface, and the next thing I remember was waking up on the deck with blood pouring out of my ears, nose and mouth.

Clay had seen me reach the surface and start to drift seaward face down in the water and had jumped in and pulled me back to the Sterling. When Keith came up a few minutes later, after he couldn't find me on the bottom, they opened the valve on the tank I had been wearing to see what was

wrong and staggered back from a strong whiff of what smelled to them like exhaust fumes. We decided that someone must have used it after it left the factory and had refilled it with unfiltered air.

Meanwhile, a squall hit the area, lasting several hours. Not until it lifted did we see that the Sterling had swung around in the changing wind, snagged both buoy lines in her propeller, and dragged her anchor about three hundred yards away from the Monitor site. Clay, seeing that the three survey vessels were raising anchor and getting ready to steam off, rushed over in a skiff to tell Commander Reed about the calamity. Reed marked the Monitor's location on a chart with her precise bearings, which he gave to Clay assuring him that we would have no trouble locating the wreck again. The bearings he gave were: 20 degrees 27 minutes—Loran Tower to Cape Hatteras Lighthouse; 95 degrees 51 minutes—Cape Hatteras Lighthouse to Kinnakeet Coast Guard Station (Askins Creek); 31 degrees 28 minutes—Cape Hatteras Lighthouse to Buxton Water Tower; and 23 degrees 8 minutes—Cape Hatteras Lighthouse to Cape Hatteras Auxiliary Lighthouse.

By the time Clay returned with the chart and bearings, I had stopped bleeding and wanted to make another dive (this time with one of my own tanks) to make sure that we buoyed the exact site again. Clay and Keith tried to talk me out of it, and I finally agreed to make only one dive to check the buoy anchor after Keith had located the wreck. Keith

made several dives in the area Commander Reed had marked on the chart but failed to spot any signs of the Monitor, and so I decided to try my luck. Usually I can shoot right down to the bottom no matter how deep, but this time I had gotten less than ten feet down when my head seemed to explode. I felt as if I were reeling around in a drunken daze and had to surface immediately. Keith was in almost as bad shape as I was, numb from the cold in spite of the heavy track suits we wore, and we decided to head back for Hatteras. As we were pulling in the Sterling's heavy iron anchor, it caught on something, finally surfacing with one of its huge flukes bent 90 degrees out of shape. Only later did it occur to us that the fluke must have caught the rim of the Monitor's turret, since there were no other wrecks nor any large rocks in that area.

Keith insisted that I go to the doctor in Hatteras, who confirmed my suspicion that my left eardrum had ruptured, probably when I ascended so rapidly after inflating my life vest, and he advised me to stay out of the water for at least a month. (Later, at Camp Lejeune, Captain Legge had one of the ear specialists from the hospital base examine me also, and he warned that if I went diving again within three months, it might be the end of my diving career).

Clay telephoned his editors again that evening from Hatteras and learned that Life's underwater photographer, Peter Stackpole, was on his way down and would be able to help Keith

relocate the Monitor, since I was temporarily out of commission. Peter arrived the next morning, and early the following day we were anchored again over the site marked by Commander Reed. I sat on deck burning with envy while Keith and Peter made dive after dive in a wide radius around the Sterling, each spending a total of three cold hours on the bottom before rising winds forced us to run to port.

The rising winds were the beginning of a gale that lasted for days and days. First Peter and then Clay had to return to New York, and finally Keith and I gave up also and left for Camp Lejeune. We were in very low spirits, which sank even lower when we heard that some of the newspapers were condemning the second finding of the Monitor as a fraud also. The idea of photographing the Monitor, or better yet raising her intact, was becoming more and more of an obsession with me, if only to silence those doubting Thomases.

Clay at least was able to convince the editors of Life that we had found the Monitor, and they agreed to back another expedition. This time we got the full support of the Navy, which lent us three top divers, and the Department of the Interior, which ordered the same three Coast and Geodetic Survey vessels to help us in the search again.

By August 4 everything and everyone—diving tender, survey vessels, photographers and divers—were assembled in Hatteras and ready to start. The water was calm and fairly clear, and this time I was certain we couldn't miss: the

Monitor would be on the cover of Life within a few weeks.

Commander Reed and his superior, Commander Mathieson, who headed the team of survey vessels, assured us that they could put us directly over the Monitor in a matter of minutes, and the sonar units on all three vessels started pinging away. When no contact was made after several hours of probing, the fathometers were brought into action, but no irregularities appeared on the almost flat bottom. Finally, draglines were set up, and the ships swept back and forth over an area of several square miles—still no results. We were completely baffled; Keith and I had seen and touched the Monitor and knew she was there. We were speculating over whether there could have been a mistake in the bearings, when Commander Mathieson called a conference aboard his command ship. The only explanation that occurred to them, he said, was that the Monitor had been covered over by shifting sand during the several severe gales that had been battering Cape Hatteras since we had been there the month before. They offered to stand by for several more days, but since there was really nothing more they could do, Clay and I decided not to keep them from their regular work any longer.

We still had not given up hope, and for the next three days Keith, Peter, and the three Navy divers searched the bottom, until on the third day I made an interesting discovery. We were anchored over the spot that Commander Reed had buoyed again before leaving, and bumping the Sterling's fathometer

switch accidentally, I noticed that the depth reading was only forty feet, whereas the Monitor had been lying at a depth of forty-five feet, sloping down to forty-eight feet, when we had found her on the previous expedition. We had the divers go down and check the fathometer reading with their depth gauges, while we did the same from the surface with weighted lines. There was no doubt about it. The sand was now more than five feet higher in the spot where we believed the Monitor to be—more than enough to cover over any trace of the gun turret, which had been only partially uncovered before.

So Commander Mathieson's theory was correct. And if we needed any further convincing we soon had it from the many local fishermen and the officers at the Hatteras Coast Guard Station whom we talked to. They all assured us that such rapid changes in depth were a common occurrence around Hatteras. Straight out from Cape Hatteras were the famous Diamond Shoals, shallow sand banks fifteen miles long and six to eight miles wide, which are constantly shifting in area and position. In a bad gale, they said, depending on the direction of the wind and currents, tons of sand are washed off the shoals toward shore, sometimes for miles up and down the coast, only to be scoured away again and re-deposited on the shoals during the next gale. That was that. All we could do was pack up and wonder how long it would be before a favorable storm would uncover the Monitor again.

During the more than ten years that have passed since I dove on the Monitor, many people have asked me why I never went back to relocate her and at least try to take a photograph. The answer is simple. That would mean waiting on the beach for weeks, maybe months, for good weather. Then, more time, and great expense, would be needed to find her again—that is, if she weren't completely buried in the sand. And all this without much chance for a decent photograph: visibility is never more than ten feet where she lies (usually less) and at that distance only a small part of her turret could be shot in one photograph. But raising her is something else again. I would like to see her raised and preserved as one of the most interesting relics of our country's naval history, and if someone could find a spare \$100,000, which is what it would cost to refloat her, provided her hull is still reasonably intact, then I'm more than willing to do it.

EDITOR'S NOTE

After the Marx episode, interest in trying to locate the Monitor in the shallows off Cape Hatteras, north of the lighthouse, was spontaneous. After all, the man had claimed to have seen it, walked on her deck and to have left a coke bottle with his name in it in the gun turret. Reports flourished by local residents of having seen the Monitor just as Marx had done from the air while flying low over the area. It seemed that the Monitor was there, all that had to be done was to find her exposed in the steadily shifting sands of the Cape.

One of the most active groups at this time was the North Carolina Tidewater Services, Inc. in partnership with the State of North Carolina who claimed ownership under a 1967 law.

Mr. Landahl wrote at this time telling the searchers about the 1950 U. S. Navy test. Of particular note is his statement that divers attempting to confirm the wreck were tossed around "like a kite on a string."

This information, however, must have only confused the shallow water efforts because the UOL position was over 20 miles at sea, south of the Lighthouse.

121 Barranca Road
Los Alamos, New Mexico 87544

November 11, 1968

State of North Carolina
Historical Society
Raleigh, N. C.

Gentlemen:

August 28 issue of NAVY TIMES mentioned that the State of North Carolina and the N. Carolina Tidewater Services Inc., a salvage company, were considering a search and recovery operation for the USS MONITOR. This interests me because in 1949 or early 1950 I participated in a small search effort for MONITOR. The USS AMc(U)-11, enroute to New London, Conn. from underwater sound work near Charleston, S.C., had permission to spend a few hours searching off Cape Hatteras. We had some special underwater locating equipment on board which was being evaluated. This sonar equipment was built for the Bureau of Ships by the General Electric Co., of Schenectady, N.Y. It was called simply: Underwater Object Locator, Mark II or Mark IV.

We had copies of information from the National Archives which consisted of a report by the Commanding Officer of the USS HARTFORD, (?) a man-of-war sailing ship in company with MONITOR. This report gave the circumstances of the sinking and approximate bearing and distance from Cape Hatteras at the time MONITOR sank. Our search was based on this information. We spotted an object on the bottom which had measurements similar to those of MONITOR. Depth was about 240 feet and the bottom appeared sandy. More than one other object was detected, however none of them had a shape factor like the one we believed to be MONITOR. The bottom seemed to be free of rocks and other litter...more like hard sand. Deep sea divers from a submarine rescue vessel in company with us were unable to inspect the object because the strong under water currents swept them out like a kite on a string!

Should you not have MONITOR located, perhaps the Navy would make our search information available. My recollection is: our information is contained in an USN Confidential report titled "Evaluation of the March II or IV UOL" written in late 1949 or early 1950 and submitted by the commanding officer of the USS AMc(U)-11, Jack F. Heard, LT. USN, to Commander Operational Development Force, Norfolk, Va., and, to the Bureau of Ships.

With best wishes, I remain,

(Signed) Charles E. Landahl,
LTCDR USNR (ret)

November 18, 1968

Lieutenant Commander Charles E. Landahl, USNR (Ret.)
121 Barranca Road
Los Alamos, New Mexico 87544

Dear Commander Landahl:

Thank you for your informative letter of November 11, 1968 telling of the underwater search off Cape Hatteras by the USS AMc(U)-11 in 1949 or 1950.

The fact that this search revealed on the bottom an object with measurements similar to the "Monitor" is of great interest to us. This department has authorized North Carolina Tidewater Services, Inc. to search a specific area adjacent to Cape Hatteras for any salvageable historic shipwrecks. A proton magnetometer being used by the searchers resulted in one brief indication of what seemed to be an iron object of the approximate size of the "Monitor" lying one mile from shore. Subsequent sweeps of the area failed to yield another magnetometer reading, divers found only a flat sand bottom and water jet probings in the sand revealed only clay at a depth of about 15 feet.

We will continue our explorations within the three mile limit primarily because the state has no jurisdiction further seaward. However, private searchers might want to take on a larger pattern and we are naturally interested in seeing the "Monitor" found and raised, if possible. So, we will write the Navy in hopes of securing the search information you have so thoughtfully called to our attention.

With appreciation and best wishes, I am

Sincerely,

(Signed)

Samuel P. Townsend
Assistant Museums Administrator

SPT:ph

EDITOR'S NOTE

While Tidewater Services were combing the shallows, Captain W. F. Searle, Supervisor of Salvage decided that scheduled tests were conducive to his own Monitor search. He made contact with Admiral Eller, Naval History Division and suggested a joint effort.

The file indicates that a survey of the available records was made but a search was never conducted.

Washington, D. C.
OOC-1:WFS:erc
Ser 00C/2241

25 Nov 1968

Rear Admiral E. M. Eller
Naval History Division (OPNAV)
Main Navy, Room 1210
Washington, D. C. 20360

Dear Admiral,

When Admiral Sullivan was here last month he spun a yarn to me that has tickled my interest. He told me of a project he started in 1946 having to do with the original USS MONITOR. I have dug out Sully's old file. The enclosed is from it.

Now this has started me to thinking and I would like to propose a joint Naval Historian - Supervisor of Salvage project to go after the MONITOR.

If you could put one of your young researchers to work this winter and dig out whatever is possible on the ship's loss, perhaps we could sleuth a good datum. From this I could get a start.

I currently have a major project at the Mine Defense Laboratory (MDL) studying various underwater search systems. This is to support my everyday work of looking for downed aircraft, lost bombs, and sunken submarines. We have to run some at-sea tests next spring and summer and I might just as well run them off Cape Hatteras as any place else.

I have contract search and salvage ships lined up to do the above, so that will be no problem. The Navigational Aids Support Team at Norfolk takes care of a Decca Navigation System which belongs to us and I'm sure they will support us on the beach.

Divers to investigate contacts will be no problem. I can arrange either Navy or contract divers; most probably the former from MDL in support of the search gear test program.

If we find the ship, we can then gin up some plans to salvage her.

In short, I propose to look for MONITOR as a by-product of some tests I've got to run anyway. Thus ship time and funding will be no problem.

Ser OOC/2241

Are you interested?

Very sincerely,

W. F. SEARLE, JR.
Captain, USN
Supervisor of Salvage

Encl:

(1) Record of 1946 discussions

Copy to:

OOC-S (Tickle 15 Dec)

FILE: USS MONITOR

EDITOR'S NOTE

Contemporary with these early searches, Captain Ernest W. Peterkin USNR of the Naval Research Laboratory in Washington, D. C. commenced the most thorough and documented study of the navigational track of the Rhode Island and the events leading up to the sinking of the Monitor. Little did he expect that what started as a casual interest would develop into a major contribution to the final search and confirmed identification of the Monitor. His assistance to Project Cheesebox, in particular, is gratefully acknowledged.

Excerpts from Capt. Peterkin's personal log book are inserted here to bring to light in the interest of complete history the aborted attempt by the research vessel Mizar in 1970 and to explain how Mr. Roland Wommack was introduced to Capt. Peterkin and how the Captain became associated with Project Cheesebox. Chronologically his log takes us beyond some of the following attempts, however, it is presented here at this point in its entirety for continuity sake.

November 1970 - After several years of occasional discussions with Chester Buchanan concerning the possible location of the Monitor, an opportunity arose to make an attempt to locate her during a forthcoming test of a new, high intensity flash light and underwater camera. As wrecks were going to be used as targets of opportunity in the Hatteras area, Buchanan asked for a possible position of the Monitor.

Using narrations of the sinking collected over the years, current data, magnetic variation, and light house locations and the assistance of the Naval Observatory in computing a moonset a position was evolved as a result of reconstructing the events leading to the sinking. The positions given was $34^{\circ}58.2'N$, $75^{\circ}42.0'W$ and was given to Buchanan on 29 November 1970.

30 November 1970 - Buchanan departed Washington, D. C. in the afternoon on MIZAR for the Blake Plateau off South Carolina. If he makes any positive contact, he will report with respect to a reference point $34^{\circ}46'N$, $75^{\circ}45'W$. He will be in the Hatteras area sometime between 7-14 December 1970.

We are not sure of the importance of such a find to the Navy Department and have therefore limited the knowledge of the possibility of this development to ourselves and Buchanan's supervisor Paul Walsh. This

would give the Navy an opportunity to make what claim they may wish. We are not certain what may happen.

Upon checking the plotting done on 29 November 1970, an error of several degrees was discovered in the final bearing of the wreck due probably to misinterpretation of the drafting machine rose used at NRL. Will make new determination and radio to Buchanan during one of his daily checks with NRL.

4 December 1970

National Archives - Microfilm Reading Room

Micro Copy No. 8 - Roll 162

Letters received by Secretary of Navy from Squadron Commanders. 1841-86

North Atlantic Blockading Squadron, January 1-31, 1863

Rhode Island pages 25, 83, 137, 348, 375

Page 64 of book reads

"At 11 pm, when 20 miles SSW of Hatteras"
Lee to Welles 4 Jan. 1863

Page 84 of book reads

"About two hours afterwards when about 20 miles SSW of Cape Hatteras."
Trenchard to Lee 3 Jan. 1863

Letter Book USS Rhode Island 3 January 1863 not available in Archives according to Mr. Parker, military records.

4 December 1970 - After having examined the log book of the Rhode Island on the day before and plotted her movements, (as well as possible) prior to and after the sinking of the Monitor, the 11:00 p.m. 30 December 1862 position of the Monitor (reported by Cdr. Trenchard in his 4 January 1863 report to Rear-Admiral Lee) as 20 miles SSW of Cape Hatteras (Light House?) appeared to be very improbable for the following reasons:

a. The last bearing taken on the Cape Hatteras Light House before the sinking was at 8:45 p.m. on 30 December 1862 placing the Rhode Island at 20 miles S $\frac{1}{2}$ E (about 34°55.4'N and 75°29.9'W). For the next seven hours the speed of the Rhode Island is reported to vary from 0 to 3 knot averaging 2 knots with the purpose of holding her position against the wind (6-7, SW) SW by S and the current (1.5 knots NE) while headed in a south-westerly direction.

b. The anchor was reported to have hit bottom in 60 fathoms.

c. At the time of the end of her period of watching at the position of the sinking, the Rhode Island was reported to be 8-10 miles east of Cape Hatteras. The reports say "directly" east but give no report the north or south distance.

d. Browne in the first cutter reports, while being carried to sea, turbulent waters but not the surf or breakers that may be expected going over the shoals and no report of seeing the Cape Hatteras light. He must therefore have passed considerably to the eastward of Diamond shoals.

e. The movements of the Rhode Island on the morning of the 31st and her soundings indicate she was coming in from deep water rather than the 16-17 fathoms under Cdr. Trenchard's 11:00 p.m. position before the sinking.

f. If it is considered that the term "SSW" in Cdr. Trenchard's report to Rear Admiral Lee was copied incorrectly or was inadvertantly reported by Cdr. Trenchard, and the position at the time of the sinking was "SSE", then the position would be near to the 8:45 p.m. position and very close to the 60 fathom line.

g. An examination of the Letter book of Rear Admiral Lee shows the report of Trenchard's to be "SSW". Unfortunately, the Letter book of the Rhode Island is not extant. It should be noted that the Rhode Island was holding a SSW heading during the sinking. Although she could not turn her paddle wheels because of the hawser fouling, she was rigged for sail and may have used sail to keep her position.

It was necessary to conclude that the position given Buchanan for the possible location ($34^{\circ}58.2'N$, $75^{\circ}42.0'W$) was improbable and a new one should be selected. Relying heavily on the fact that (1) the anchor was dropped in 60 fathoms, (2) Rhode Island was trying to hold her position at a very slow speed probably just enough to compensate for the current, (3) the drift that may have been caused by the SW wind, (4) and a possible course traced by following her soundings coming in from sea, a new search area was proposed along the 60 fathom line between $34^{\circ}55'N$, $75^{\circ}24'N$ and $35^{\circ}00'N$ and $75^{\circ}18'W$, limited by the position of a depth charge reported in 1957. A 4-mile wide sweep was proposed on an interim basis, time running short for a better rationale.

The following was sent to MIZAR by Dick Bridge at 3:00 p.m. 4 December 1970.

4 December 1970 1930Z

From: E. W. Peterkin

To: C. Buchanan

1. As a result of new information original position is improbable.

2. Recommend change to area starting 9 miles north and 21 miles east running along 60 fathom line and ending 14 miles north and 27 miles east from your

reference.* Width of sweep northwest or southeast at least two miles.

BT

8 December 1970 - Called Mrs. Kilcullen and asked her if the "commission" that assembled the Official Record kept a file of correspondence relating to comments that may have been made on the publication, pointing out errors or omissions. Possibly looking for a correction to Trenchard's reference to the position of the Rhode Island during the time of the Monitor's sinking. [A Study on the Project of the Compilation of the War of the Rebellion - 1931] [Army Commission] [Nothing on Navy Records]

9 December 1970 - Buchanan on MIZAR reports the new search location is in the main shipping channel and he is not prepared to conduct operations in this area.

10 December 1970 - To insure there is no confusion about the position, sent the following message via Genarri:

NRL
10 December 1970
1535 Z

From: Peterkin, NRL

To: Buchanan, MIZAR

Reference my 1930Z 4 Dec 1970 positions given correspond to 34°55'N, 75°24'W and 35°00'N, 75°18'W.

*Buchanan's reference point is 34°46'N, 75°45'W.

Confirm.

BT

11 December 1970 - Probably no possibility of searching on this voyage. MIZAR to return to Washington on afternoon of 14 December 1970.

24 May 1972 - Completed another run through of the USS Rhode Island movements for the period 28 December 1862 - 2 January 1863. Gave Buchanan a final estimate for search from MIZAR.

11 August 1973 -

*Captain Johnson - Washington *Capt. D. Keach USN

R. Wommack, Diver, Washington *Cdr. D. Walsh USNR

Norfolk Naval Museum

*Dr. Waterman

*Captain Gilchrist, USN

*E. W. Peterkin

10 August 1973 - (9:15 p.m.) As a result of newspaper accounts in June 1973 of search operations being made for the Monitor off Hatteras L.H. by a "Marx" group and some implications that they might request Navy assistance, I called P. Waterman to see if any inquiries had been made because the area apparently being searched [1 mile east of Cape Hatteras and 35 feet] seemed highly unlikely for the wreck site according to studies I had made in the past. Dr. Waterman said that inquiries had been made by a group desiring to borrow underwater TV equipment to

verify a sonar contact.

Dr. Waterman called back and asked me to bring to his office in the Pentagon my research material to compare with the findings of the party wanting to borrow the equipment. Spent evening assembling charts and records on Monitor sinking.

11 August 1973 - 9:30 a.m. Went to office of ASN(R & D) and met Dr. Waterman; Capt. Don Keach, USN, (DNL office); Cdr. Don Walsh, USN, (ASN R & D?); Capt. Gilchrist, USN, Aide to ASN R&D; Joined later by Capt. Johnson, OP-08, USN; and Mr. Roland Wommack of Washington, D. C.

Mr. Wommack has been researching the Monitor sinking for several years and proposes to use a "snooper" TV to examine a sonar signal found at 50 fathoms off Cape Hatteras. Mr. Wommack's project seems to be a limited partnership connected with a proposed Norfolk Naval Museum.

I explained my rationale, research, proposed location of the Monitor. The position was within a few miles of the sonar record.

The Monitor Project is not part of the "Marx" Operation, and their find is in a most likely position.

Dr. Waterman expressed an opinion that the Navy would supply assistance providing there was no personal gain involved and material discovered would be made available to the public.

I was asked to write up my findings and take an active role in the operations by making myself available to Capt. Keach as required.

A search operation is planned on 10 September 1973.

11-12 August 1973 - Began review of old material attempting to put it in better shape.

13 August 1973 - Wrote memo to Director NRL regarding meeting.

17 August 1973 - Briefed Capt Geary on Project.

18-19 August 1973 - Replotted data.

Using a set of 060° @ 1.27 kts, position at time anchor dropped: (0000/31 Dec 1862 \approx 250 ft.)

$34^{\circ}52.85'$ (current based on run between
 $75^{\circ}30.5'$ 1630 Fix & 2045 Fix, 30 Dec 1862.)

Using a set of 074° @ 1.33 kts, position

$34^{\circ}53.5'$ \approx 200 ft.

$75^{\circ}31.0'$ (current based on run between 2045
Fix 30 Dec. & 1200 Fix 31 Dec 1862)

To be compared with old computation on 24 May 1972 between

$34^{\circ}54.0'$ and $34^{\circ}52.5'$

$75^{\circ}31.5'$ $75^{\circ}34.0'$

30 August 1973 - Wommack concerned by other efforts underway to search for Monitor, began search operations last week, but, because he cannot obtain a Navy TV camera, is contemplating a dive on the sonar location. Cdr. Walsh does not want Navy participating in a marginal diving operation.

All personnel Navy participation postponed. Wommack called a couple of times and I was out. Tried to locate him in a motel and Burron's Oil Company but no luck. He is going out over coming weekend.

4 September 1973 - Called Capt. Johnson in morning. He said Wommack's attempt unsuccessful due to sonar failure.

Wommack called in afternoon. Related experiences in last week. Loran failure. Searched around two miles south and slightly east of wreck of "Clark" at 75°33'W 34°49.4'N in 270 feet of water. (28.3 miles south Cape Hatteras L.H.) He has a reference from Bureau of Ships to Secretary of the Navy regarding Bankhead's reply refining sinking position. Wants to visit me this week.

At 5:15 p.m. received a call from Ken Ringle, staff writer Washington Post after reference from Wommack. Asked my interest, how evolved, occupation, what I know about Edgerton, how I met Wommack, (Waterman's office) Edgerton news release. Reason for splurge of interest in Monitor. My thought was availability of technology and increase in development of oceanography techniques. Reported call to Capt. Geary's office.

10 September 1973 - At National Geographic

Dr. Newton

Ms. Nicholson (National Geographic)

Mr. Watts (Eastward)

Lindeberg
Hoffman
Stokesbury
Scofield
O'Neill

Saw Duke University TV pictures.

1 October 1973 - Received call from Andahazy NSRDC - Annapolis and Midshipman Ed Miller regarding Monitor. Invited to review paper and plans 11 October 1973.

11 October 1973 - Meeting at Naval Academy regarding "Cheese-box Project" on Monitor recovery.

Attendees

Andahazy - NSRDC, Annapolis

Manly - EODL, Indian Head

Mr. Sumrall - Naval Academy Museum

Midn l/c - Miller

Clites

Christensen

Snook

Meyer

Richner

EDITOR'S NOTE

Back tracking to the summer of 1973, there was a flourish of activity to locate Monitor. From June until August there was a total of four different groups with different ideas of location and method searching for Monitor. Ultimately this effort would lead to the discovery of the long lost Monitor.

Carrying over operations from the previous summer and after doing quite a bit of footwork to procure funds, equipment and publicity during the winter, the U.S.S. Monitor Foundation headed by Mr. Michael O'Leary was operating in the area which Corporal Marx had claimed to locate the ship. They had set up operations in two trailers at Hatteras Inlet and were hoping to have enough money and better equipment to make the final effort.

Their research design which includes their theory on the location is included.

U.S.S. Monitor - Loss and Recovery

On March 9, 1862, at Hampton Roads, Virginia, the U.S.S. Monitor, the first iron-clad vessel of the Union Navy, fought an important and historically significant engagement with the Confederate iron-clad ram, the C.S.S. Virginia (formerly U.S.S. Merrimack). The action of the "Monitor" prevented the Union blockade from being broken, and thus prevented England from extending diplomatic recognition to the Confederacy.

On December 29, 1862, some time after the Virginia (Merri-mack) had been destroyed, the Monitor was proceeding under tow to Wilmington, North Carolina to enforce the blockade against yet another Confederate iron-clad. On New Year's Eve, while some 10-12 miles southeast of Cape Hatteras, North Carolina, a southwest gale struck her.

The pounding waves loosened the caulking around the base of the turret and in the anchor well, causing the vessel to ship water faster than the pumps could put it out. Consequently, the Monitor began to act as a sea anchor or drag on the tow ship, the U.S.S. Rhode Island, dragging her broadside to the swells. The Captain of the Monitor ordered the tow-hawser cut and the ship abandoned. The gale was by now running 30 foot seas, and a lifeboat from the Rhode Island was able to rescue only part of the crew. Four officers and twelve men remained aboard the Monitor at the time when the lantern atop her conning tower disappeared from sight. It was at this

location, some 10-12 miles off the coast in 300 feet of water that the commander of the Rhode Island reported Monitor lost.

However, the vessel still had steam up, and was still manned. Consequently, it is very possible that she headed for shore north of Hatteras and behind the little protection afforded by the shoals. The high seas running at the time would have obscured her turret lantern, or a wave breaking over her could have extinguished it, causing the Captain of the Rhode Island to believe she had sunk. In any case, it seems very reasonable that the men aboard would have attempted to beach her.

This theory is borne out by the fact that two days later, five bodies of Monitor's crewmen were washed ashore about one and a half to two and a half miles north of the Hatteras light. In order for those bodies to reach the shore from the Navy's reported sight of the sinking, they would have had to drift 10-12 miles across the path of the gale in progress and across the course of the prevailing current, over shoals and beach, all within a one mile area. The odds against this are phenomenal. Further proof was given to the theory when, in 1872, during the low tide point of the year, the Gray family was picnicking on the Cape and reported seeing the turret of "the Yankee Cheesebox" in the breakers about $1/2 - 3/4$ miles off shore. (Coastal geodetic survey reports that the shoreline at that point has receded a little more than 1.1 miles since

that date, putting the present location of the sighting about 1-3/4 - 2 miles off shore.)

In the late 1940's, a retired author named MacNeill who lived on the Cape made a number of aerial searches for Monitor, and sighted her on his 76th flight about 1-3/4 miles out. The water conditions at Hatteras are such that it is extremely difficult to get visual sightings, and on some forty subsequent flights, MacNeill reported he was only able to locate the Monitor on a few flights.

In 1954, a diver, Robert Marx of the U. S. Marine Corps, made an extensive search effort for Monitor with Scuba gear. Marx located the ship, lying upright on a soft sand bottom in about forty feet of water. Only her turret was exposed. A Navy coastal survey vessel made an underwater electronic scan, confirmed the find, and gave Marx the coordinates. However, a serious injury caused by defective diving equipment prevented Marx from making other dives on the spot, and before another dive could be made with photographic gear, a southwest gale intervened blowing away the buoy and markers with which Marx had marked the sight, and burying the Monitor in five to six feet of new bottom sand. Marx could not wait for the next northeast gale to wash away the sand and free the vessel again, so he gave up the search. Legal problems had risen as well, since at that time the Navy had not yet abandoned the wreck (the Navy subsequently has abandoned Monitor), and there was

at the time a question as to the ownership of the vessel which also discouraged further efforts by Marx.

In 1967-68, a firm called North Carolina Tidewater Services, Inc., made a magnetometer search of the area. With inferior equipment they made a well-defined sighting of the correct shape and composition within one-half mile of the site reported by Marx. That was in May, 1967. The searchers were able to work only a few days at a time, with long periods in between. Consequently, when they returned to the site, they were unable to repeat their previous reading. In fact, extensive searches in the area gave only erratic readings. It was at this time that they discovered that the interior of their magnetometer had corroded from sea-water, and that they could get no accurate readings. Several attempts to rebuild and refine the magnetometer proved fruitless. Finally the search ended because of financial inability to continue. The main organizer of the effort, Robert Simmons, has since died.

That is the history of the loss and the search for the Monitor - so far. However, the U.S.S. Monitor Foundation, operating under an exclusive search and salvage agreement with the State of North Carolina, in whose waters the vessel lies, plans to organize an adequately-financed, scientific search for the Monitor, using the best available electronic and magnetic detection devices, as well as scuba search. They will be operating in a search area north of Diamond Shoals which

includes the site reported by Marx, MacNeill, and North Carolina Tidewater Services, Inc. The U.S.S. Monitor Foundation believes the Monitor is there, and they intend to find it, and then to raise it. For the salvage operation, public support and Navy assistance can be obtained once the vessel is located beyond a doubt. So what they are seeking now is financial support to help them make the search and find the vessel.

The agreement with North Carolina calls for the Monitor to be given to the Navy to serve as a public Civil War monument for the sailors of North and South. The U.S.S. Monitor Foundation is incorporated as a non-profit, educational, scientific and charitable organization, and has applied for, and been granted, tax-exempt status by the Internal Revenue Service, which means that all contributions to the Foundation are tax-deductible.

Famed "Monitor" Is Found Again

By Joseph Wachtman
Maritime Editor

Like the legendary "Flying Dutchman," often reported sighted but never brought into port, the first iron-clad warship constructed for the U.S. Navy periodically is reported located in its watery grave but never yet has a salvage team managed to make a line fast.

The USS Monitor, grandfather to the now defunct battleship class of steel vessels and a participant along with the Confederate Merrimac in history's first head-to-head naval engagement of iron-clads sank more than a century ago in the treacherous "graveyard of ships" off North Carolina's Cape Hatteras.

All but impervious to the shot and shell of enemy warships but notoriously unseaworthy, the Monitor was far from battle and under tow by the USS Rhode Island in a gale when she had to be cut loose and went down with the loss of three officers and 12 men of her complement of 63 on Dec. 31, 1862.

Even more ignoble was the fate of the Merrimac, scuttled by her own crew when the Confederate forces abandoned Norfolk Navy Yard and fell back to Richmond.

The Monitor has intrigued the imagination of historians and salvage experts alike, despite

the lack of valuable cargo or other tangible reward, but there is little evidence of success in finding her until fairly recent years.

In 1947 the U.S. Navy claimed to have located the iron hulk on a routine anti-submarine patrol. The Navy said the vessel was in 120 feet of water some 20 miles southeast of Cape Hatteras and indicated no interest in undertaking the formidable task of raising her, despite considerable public sentiment for making the effort.

Baltimore's own Donald Stewart, who heads the USF Constellation Restoration Committee among other chores, in 1955 when a Michigan group offered a \$1,000 reward for locating the Monitor, recalled having viewed through a water glass — a glass-bottomed bucket — the distinctive turret of the "cheesebox on a raft" protruding from the sand in June of 1948.

But the distinction of being the only men to actually touch the historic warship since her crew abandoned ship 93 years earlier was claimed in July of 1955 by Marine Corps Cpl. Robert F. Marx, 21 of Los Angeles, and former Lt. Keith Ingram, of Houston, who said they had filed claim by placing a note in a bottle and putting it inside one of

the Monitor's gun ports.

Cpl. Marx, who later became a professional treasure hunter, claimed he had spotted the vessel on an overflight. Later, he pinpointed the hulk by skindiving. He placed the location at one mile east of Buxton, N.C., in 50 feet of water and said only about four feet of the nine-foot high gun turret projected above the sand.

In 1968, North Carolina Tidewater Services Inc., a salvage firm, in partnership with the State of North Carolina, which claims ownership under a 1967 law, announced extensive undertakings to find and raise the Monitor for exhibit. There appears no record that they met any success.

A year ago, in July of 1972, Kendall Marine Inc., an organization of 15 men headed by Roland Wommack, a 1959 graduate of the U.S. Naval Academy at Annapolis and now an oceanographer in Riviera Beach, Fla., announced plans to film "The Descent to the Graveyard," a \$200,000 project to be completed in 1973, on the Monitor.

Claiming to have located the vessel by sonar, the group admitted their operation was commercial and their intent to make money but claimed the privately-financed historical project was in conjunction with the Norfolk Naval Museum and the U. S. Department of Interior. They purchased a tanker for \$10,000 and planned to dive to depths up to 300 feet in efforts

to find the Monitor.

There has been no follow-up announcement of success or of any screening date for the film. In fact, it is not known whether the group ever started on its second project, planned to begin last April, to locate and recover another vessel, the Republic, sunk somewhere off Nantucket with a cargo of \$27 million in gold.

But now yet another organized attempt is underway, this one by Underwater Archaeology Associates Inc., a Richmond-based group which includes some impressive members, including the University of Delaware and Duke University.

Following two years of research in cooperation with the USS Monitor Foundation of Washington, the UAA began actually exploring the area in May and located the turret, still apparently above the sand, by sonar. A diver's marker actually was placed at the site.

Unfortunately, the reluctance of the Civil War battleship to leave its subaqueous anonymity has again been made apparent. A passing ship destroyed the buoy marker and the search must begin again.

However, the location appears to fit with that given by Cpl. Marx. The site was reported to be about a mile off the eastern edge of Hatteras Island and the vessel under 35 feet of water and probably at least 10 feet of sand. The

theory is that after the Monitor was cut loose from its tow, it drifted considerably nearer shore before sinking than originally thought and has been moving still closer underwater. Now, it may be anchored by the deep cover of shifting sand.

The UAA experts to relocate the site by sonar again once it does it will require at least a week for divers to reach the hulk. And clearing it of sand so it can be

raised will take considerably longer, if it is at all possible.

The area has a very flat and sandy bottom criss-crossed by riptides and current which swirl the sand into miniature underwater storms that bury objects for easier than any known method of uncovering them.

The Westinghouse Ocean Research & Engineering Center in Annapolis and the U.S. Navy have been asked to take part in the recovery project but neither has expressed any enthusiasm at this stage.

(News American July 22, 1973)

EDITOR'S NOTE

Contemporary with this effort in the shallow waters, the nucleus of a project at the U.S. Naval Academy was evolving.

In February of 1973, Midshipman 1/c Michael Ellison was pondering on using his spring leave to go diving on a wreck. He and his roommate wanted a shallow water wreck not too far away. He wandered into an underclassman's room to ask if he knew of any wrecks in the area. The underclassman, 2/c Edward Miller had read Bob Marx's, Always Another Adventure, while on a submarine cruise the previous summer and had purchased a chart of the Cape Hatteras area in an attempt to plot the Marx position. Not having any success, Miller had put the chart on a shelf to collect dust. When Ellison brought up the subject of wrecks, he dug out the chart and book from his locker and handed it over telling Ellison to go dive on the Monitor.

Ellison read the book with intense interest and he and his roommate drove down to Cape Hatteras to scope out the area and to locate the landmarks which Marx referred to.

After spring leave, back at the Academy, Miller and Ellison were usually seen together at meals talking about what Ellison had learned and how they could muster support for a search effort.

Through Professor Keith, Ellison's academic advisor at the Academy, William J. Andahazy of the Naval Ship Research

and Development Center, Annapolis, Maryland was contacted. Mr. Andahazy was young, enthusiastic, and eager to help the midshipmen in the project. Bill Andahazy is in the magnetics branch and provided the best method for locating a large ferrous target that in all probability would be buried in sand.

Plans were quickly made for an expedition to Cape Hatteras during dead week, the end of May.

The group included:

Midn 1/c soon to be Ensign M. E. Ellison

Midn 2/c E. Miller

Midn 2/c F. H. Christensen

Bill Andahazy

Mike LaMott

Bruce Faddon

It is sufficient to say that because of the environment, the operation was cancelled. So after carting two small crafts, a truck full of electronic gear and loads of camping gear all the way to Cape Hatteras, they started the long trek back. All arrived home safely, a little tired and wet.

After recovering from the near disastrous first attempt, Andahazy, Ellison and Miller sat down and thought the whole thing over. Ellison would be graduating in a few weeks, Andahazy had to go back to work but would follow up a few thoughts with telephone calls and Miller started talking with Professor Darden in the History Department at the Naval Academy

to see if he could set up a special seminar for independent research with only one student enrolled, the topic of study - Monitor.

Unbelievably, the request was approved because Miller had previous college experience behind him and this special seminar would not interfere with the completion of his degree requirements.

After Ellison graduated, Andahazy made contact with the Naval Oceanographic Office and arranged through Mr. Ron Lorentzen, an airborne magnetic survey of the search area north of the light house on 17 July 1973. The aircraft had to conduct a survey close to Hatteras on that day and the Project Cheesebox survey would be tagged on at the end.

PROJECT CHEESEBOX - The Story of the Search for the Ironclad
USS Monitor

HISTORICAL SIGNIFICANCE:

The principle of the revolving turret equipped with heavy guns was, as John Ericsson himself was first to admit, an old one. However, it remained for Ericsson's engineering genius to give the principle practical application in the form of the Monitor, the first turreted ironclad warship. The pioneering efforts of Ericsson in the United States and Captain Cowper Coles, RN, in Great Britain would, after some eighty years of continuing development, culminate in the construction of the USS Missouri, one of the most sophisticated battleships ever built.

At the time of her keel laying in October, 1861, the Monitor represented a complete break with traditional Naval design. Instead of a standard ship hull, the Monitor had a large armored "raft", 172 feet by 43 feet 8 inches supported by a box-like iron hull 124 feet by 34 feet. The "raft" was designed to increase stability in a seaway thereby giving the guns a more stable platform for accurate fire and also, to protect the hull structure proper from the effects of ramming. Numerous other technical advances were incorporated into the Monitor including forced ventilation of living spaces, an armored pilot house, and a protected anchor which could be raised without exposing any members of the crew to hostile

fire. The contract price for the Monitor was only \$275,000.00, a small investment for the creation of such an important weapons system.

Monitor means a person or thing that warns or instructs. Ericsson suggested the name hoping that his Naval Warship would admonish the South and Great Britain which was then sympathetic to the Confederacy.

The prime contract for construction of the Monitor was awarded to her designer John Ericsson, 4 October 1861. Construction of her hull was subcontracted to the Continental Iron Works at Green Point, Long Island, New York; fabrication of her engines was delegated to Delamater & Co., New York City; and the building of her turret, composed of eight layers of one inch iron plates, was assigned to the Novelty Iron Works, also of New York City.

The revolutionary craft was launched on 30 January 1862; and commissioned on 25 February, with Lt. John L. Worden, USN, in command.

The ironclad Monitor departed New York Navy Yard on 27 February 1862, but steering failure caused her to return. On 6 March, with a compliment of forty-nine volunteers, she again departed New York Navy Yard, towed by steam frigate Seth Low and headed for the Virginia Capes.

As the Monitor approached Cape Henry on the afternoon of 8 March 1862, CSS Virginia, the former U. S. steam frigate

Merrimack, now rebuilt as an ironclad ram, steamed out of the Elizabeth River into Hampton Roads and attacked the wooden hulled Union warships blockading Norfolk. Flag Officer, Franklin Buchanan, CSN, the dreaded ram's Commander, singled out sailing sloop Cumberland as his first victim.

The Virginia opened the engagement with less than a mile distant from the Cumberland and the firing became general from blockaders and shore batteries; but most shots from the Union guns glanced harmlessly off the Confederate ironclad's slanted sides. The Virginia rammed the Cumberland below the waterline and she sank rapidly, "gallantly fighting her guns", Buchanan reported in tribute to a brave foe, "as long as they were above water." Buchanan next turned the Virginia's fury on the Congress, hard aground, and set her ablaze with hot shot and incendiary shell. She also damaged the Minnesota before retiring to Sewell's Point for the night.

The Monitor's crew could hear the roar of cannon as they rounded Cape Henry into Chesapeake Bay and headed toward the scene of battle. All was quiet when she hove to alongside the Roanoke. Captain James Morston, in command of the Roanoke directed Lt. Worden, USN, to assist the battered Minnesota, hard aground off Newport News.

At dawn, the Virginia again emerged and headed toward the Minnesota to administer the coup de grace. The Monitor steamed out of the Minnesota's shadow to intercept the Confederate

ironclad ram. A Confederate officer on the CSS Patrick Henry, one of the Virginia's paddle wheel consorts, described the Union challenger as "an immense shingle, floating on the water with a gigantic cheese box rising from its center; no sails, no wheels, no smokestack, no guns." But the bizarre Federal vessel soon won the respect of friend and foe alike. For four hours she fought her dreaded adversary to a standstill, in a battle which revolutionized naval warfare while protecting the Federal blockade of the southern coast from its most serious challenge.

In the months that followed, the Monitor remained alert in Hampton Roads ready to renew the engagement, should the Virginia venture forth. However, with the advance of the Union army, the Virginia was scuttled and burned by her crew to prevent capture. Later, Monitor demonstrated up the James River with the ironclad Galena and Naugatuck but was forced to return downriver because her guns could not elevate to hit the shore batteries.

Then on Christmas Eve, 1862, the Monitor received orders to proceed to North Carolina for operations against Fort Fisher, Wilmington, N. C. Towed by the Rhode Island, she departed the Virginia Capes on 29 December for Beaufort, N. C., but the historic warship foundered in a storm off Cape Hatteras shortly after midnight on 31 December. Four officers and twelve crewmen went down with the Monitor. Her hulk has never been positively located.

This is where the history books end in the story of the Monitor. However, a modern history is being written about this famous warship as resources are being gathered to mount a search to locate and recover the ironclad. Historically speaking, this ship is one of the most important warships in our nation's heritage. The story of the Monitor is a story that has been repeated time and time again in our country's history. The ship itself signifies American willpower and ingenuity. It is a story about one man's personal triumph with engineering genius when everyone doubted. It is the story of American industry meeting the challenge of advanced technology when a nation needed it most. Lastly, it is a story of a war torn Union facing the defeat of its strategy to win a war, and the growing threat of foreign intervention.

The Monitor carried with it a lot more besides iron plates, iron shot, and forty-nine volunteers - the destiny of our nation depended upon the "cheese-box on a raft."

It is only proper that a ship of such great historical significance to our nation be recovered and enshrined to serve as a constant reminder of our American heritage of the past and our American will for the future.

With this constantly in mind, our group was formed. In collaboration with four Midshipmen of the United States Naval Academy who had completed the historical research, it consists of individuals with professional expertise with the single

desire to see the USS Monitor assume its proper position next to other famed U. S. warships, not remain a forgotten sunken hulk.

It is hoped that the story will not end here - but continue to fruition when the Monitor will once again stand porter at the entrance of the Chesapeake.

Technological Considerations in the Location
of the USS Monitor

The Naval Ship Research and Development Center, Annapolis (NSRDC) has been assisting the participating Midshipmen of the Naval Academy in this program since April 1973. The assistance has been in the form of instrumentation, data and mathematical analysis. The following is a summary of the technology employed in this search.

Based on previous reports that the Ironclad USS Monitor lay within a few miles of Cape Hatteras, a limited area was designated for an intended search. Because a strong possibility exists that the Monitor may be buried, methods of magnetic anomaly detection (MAD) were considered as most practical for localization. The rationale being:

The magnetic field or signature of the ship is unaffected or unaltered by the natural surrounding media, whether it be sand, sea water, or bottom sediment.

The MAD range is relatively large compared to other location methods, yielding a wide search width.

The large magnetic moment expected due to the iron content and its state of equilibrium magnetization make it an easy target, even in shallow water.

An unsuccessful attempt to use MAD equipment from a surface craft was made during the week of 21 May 1973. Lack of

successes during this attempt lie partly in the fact that the surface craft could not be launched through the surf because unsettled beach sand prevented the small craft trailers from approaching the water's edge. Additionally, the probability of encountering personal injury as well as equipment losses in the surf was rapidly approaching unity. Further, an antisubmarine warfare (ASW) training flight requested to search the area was cancelled due to inclement weather.

Based on the lessons learned during this first search attempt, new program strategy was employed for another expedition. The following is a summary of this second attempt to localize the Monitor.

The Project Magnet Flight

The most efficient way to search a large area of ocean space for a ferromagnetic object is with an integrated MAD system deployed in an ASW aircraft, either fixed wing or helicopter.

Contact was made with the Naval Oceanographic Office, Chesapeake Beach, Maryland, for assistance in magnetically surveying the area just off Cape Hatteras, during one of the survey flights associated with project Magnet. This program is a world-wide aeromagnetic survey that is conducting geomagnetic investigations of ocean areas. It has been in existence since 1953.

Permission was granted by OCEANAV for the necessary

assistance and the survey flight was completed on 17 July 1973.

The aircraft, a P-3D, is equipped with an ASQ/81 metastable helium magnetometer which represents state of the art in airborne detection. Additionally, the aircraft is specially constructed and optimumly compensated for magnetic surveys in order to keep the magnetic noise of the aircraft to a minimum. Further, the aircraft is outfitted with data processing and positioning instrumentation to control the aircraft path to within the 0.1 mile limit of error expected with LORAN. All of these instruments were incorporated in finding magnetic targets in the operational area.

Analysis of Expected Magnetic Anomalies

Normally in ocean areas of shallow depths and especially around land sea interfaces, high geomagnetic noise can be expected. Such background noise whether geologic or geomagnetic all contribute to the interference and severely limit magnetic detection ranges between sensor and target. During the survey at Cape Hatteras, noise figures of less than 0.1 gamma peak to peak in a bandpass of 0.06 H_z were observed. (1 gamma = 10^{-5} oersted). The least detectable signal expected should have a signal to noise ratio of at least 2 to 1. In other words, a peak to peak signal of 0.2 gamma is required in order to be recognizable. It should be noted that the system threshold sensitivity of the ASQ-81 magnetometer is at least an order of

magnitude greater than that usable on this flight.

Keeping the least detectable signal in mind, the next important parameter that can be easily calculated is the magnetic moment (M). Based on ship displacement and expected equilibrium magnetization, the moment was determined to be 8.25×10^8 gamma - feet³.

From these two parameters, the slant range (R_s), i.e. the maximum distance at which the Monitor could be sensed by the aircraft can be calculated.

The total field intensity (H_t) at any point above the target is given by

$$H_t = \frac{M}{R_s^3} [3 \cos^2 \theta + 1]^{1/2}$$

Assuming the aircraft to be coplaner with the moment, we can let $\theta = 90^\circ$ or simply

$$R_s = \left[\frac{M}{H_t} \right]^{1/3}$$

After substituting the values of 8.23×10^8 gamma - feet³ and 0.2 gamma for M and H_t respectively, the slant range is determined to be 1600 feet. Schematic representation of this is shown in figure 1.

The search width (S_d) is twice the lateral search path and is obtained by

$$S_d = 2 [(R_s)^2 - (P_h)^2]^{1/2}$$

where P_h is the flight height of the aircraft above the

horizontal plane of the target. The flight height at Hatteras was 500' plus an assumed 50 feet from water surface to target plane. i. e. $P_L = 550$ feet. Substituting for $R_S = 1600$ feet and $P_h = 550$ feet, the search width or diameter at any instant in time is 3200 feet.

During the actual survey, flight patterns running north, parallel to the coast line were selected as shown in table 1. The flight paths allowed one-quarter nautical mile spacing between tracks or a value of $S_d = 1500$ feet. This distance allowed a reasonable overlap of search widths and allowed for the error in the LORAN positioning system.

If the error is constant and the overlap can be considered to be true overlap, then reversing the preceding mathematical procedure will yield a maximum and minimum total field anomaly for the Monitor.

$$\frac{S_d}{2} = \frac{1500}{2} = 750 \text{ feet}$$

with P_h constant at 550 feet, a slant range R_S of 930 feet is computed. This is the point of minimum signal, since it is at the edge of the search width. The maximum signal will occur, for all practical purposes when we are directly over the target. i.e. at 550 feet slant range. These two figures yield maximum and minimum fields of 4.9 and 1.0 gamma respectively.

Consequently, the expected anomaly caused by the Monitor during the flight survey should lie somewhere between these two values. Hence, the results of the reduced data presented

in table 2 can be narrowed considerably.

Consequently, the expected anomaly caused by the Monitor during the flight survey should lie somewhere between these two values. Hence, the results of the reduced data presented in table 2 can be narrowed considerably.

Although the other contacts recorded are not excluded as being from the Monitor, it is more likely that they are steel hulled vessels of smaller displacement. They are probably somewhere between 100 and 500 tons, if the same relationships are used to associate field strength to displacement. They may even be parts of the Monitor if the hull broke up when she sank.

Conclusions of the Magnetic Survey

It is the opinion of our group that the signal characteristics of contacts 6 and 18 of table 2 are from the same source and is the most probable site of the Monitor; weighing all parameters of analysis.

Contact 7 and 17 which are also probably from the same source is another likely site. Although the magnitude of the signal is strong enough, the source is located directly on the Diamond Shoals and would be difficult to survey at the surface by small craft. This location is particularly interesting because shoal build up over 100 years could well have buried a Monitor size ship at a site almost at the center of the shoal as is shown in figure 2.

We further believe that contacts 9 and 10 are also from the same source and are probably not related to the Monitor but is an iron hulled ship of about 300-500 tons. This is also true for contacts 11, 12, 13, 14 and 15 which indicate a large broken hull or perhaps two smaller iron hulled vessels lying in close proximity on the sea floor.

The other contacts listed on table 2 and plotted on figure 2 are undoubtedly wrecks of some other type but are either too small or they lie outside of the search area completely.

Near Field Gradient and Total Field Calculations

A computer model of the USS Monitor was made using an iron body ellipsoidal shell program developed at the Navy Ship Research and Development Center, Annapolis. The computations were completed on a CDC 6700 digital computer, which enables (with limitations) the calculation of the magnetic field gradient (gamma per foot) of any component and also the absolute field together with the total field anomaly (gamma) at the water surface over an area of 640,000 square feet. The program can make a determination at almost any point over the specified area. Various ship orientations and magnetic permeability were used as parameters. A sample of the hull material from another Ironclad the USS Tecumseh was obtained for magnetic permeability determination.

Adherence of any surface gathered data to the model patterns should identify the wreck as the Monitor even if it is buried. A typical data print out of the mathematical model is presented in figure 3.

Recommendations for Future Effort

Based on this work it is recommended that four areas be surveyed at the water surface with both a total field magnetometer and a magnetic gradiometer. These instruments are presently available at NSRDC, Annapolis, and are specially designed for magnetic detection of concealed or underwater objects. These instruments represent the optimum available today.

The order of priority of the surface search should be:

- A. $35^{\circ} 14.41'N$ by $75^{\circ} 29.80'W$
- B. $35^{\circ} 12.38'N$ by $75^{\circ} 29.70'W$
- C. $35^{\circ} 19.38'N$ by $75^{\circ} 28.09'W$
- D. $35^{\circ} 19.42'N$ by $75^{\circ} 27.82'W$

Area B may not be able to be surveyed because of its location on the Diamond Shoals. Areas C and D have lower probability of being the Monitor but are interesting anomalies and worthy of a second look.

A full measurement plan is open for discussion.

TABLE 1

MONITOR SEARCH
Position Entries for Mission Control (MCZ)

<u>Track #</u>	<u>START</u> <u>LAT/LONG</u>	<u>END</u> <u>LAT/LONG</u>
1	+035 13.00/-075 31.25	+035 20.00/-075 30.00
2	+035 13.00/-075 31.00	+035 20.00/-075 29.75
3	+035 13.00/-075 30.75	+035 20.00/-075 29.50
4	+035 13.00/-075 30.50	+035 20.00/-075 29.25
5	+035 13.00/-075 30.25	+035 20.00/-075 29.00
6	+035 13.00/-075 30.00	+035 20.00/-075 28.75
7	+035 13.00/-075 29.75	+035 20.00/-075 28.50
8	+035 13.00/-075 29.50	+035 20.00/-075 28.25
9	+035 13.00/-075 29.25	+035 20.00/-075 28.00
10	+035 13.00/-075 29.00	+035 20.00/-075 27.75
11	+035 13.00/-075 28.75	+035 20.00/-075 27.50
12	+035 13.00/-075 28.50	+035 20.00/-075 27.25

TABLE 2

CONTACT	TRACK	TIME	LORAN		SIGNAL STRENGTH	COMMENT
#	#	Z	N	W	GAMMA P-P	
1	1	1829-03	No Fix	Loran Out	.15	Weak
2	3	1837-42	35 13 99	75 30 71	.3+	Weak High Geomagnetics
3	3	1838-30	35 16 37	75 30 11	.2	Possible/Weak
4	4	1847-19	35 15 58	75 29 85	.2	Geomagnetics
4A	Begin 5	1855-40	35 05 79	75 26 90	1.0	Out of Main Search Area Good Signal
4B	Begin 5	1857-10	35 09 23	75 31 51	.2	Smooth Signal
5	5	1858-45	35 14 40	75 30 01	.6	Good but Mixed with Geomag- netics
5A	Begin 6	1904-58	35 09 55	75 29 09	.9	Good Smooth Signal - Not in Main Area
6	6	1906-37	35 14 41	75 29 80	1.0+	Solid Signal Long Persistence
6A	Begin 7	1913-24	35 08 81	75 27 65	1.0+	Good Signal
7	7	1914-58	35 12 38	75 29 70	1.0+	Solid Signal Persisting
8	7	1916-00	35 15 93	75 28 98	.2	Clean Signal
9	7	1916-18	35 16 85	75 28 93	.3	Clean Signal
10	8	1923-40	35 16 70	75 28 80	.32	Mixed with Geomagnetics
11	8	1924-34	35 19 48	75 28 24	.25	Clean Signal
12	9	1932-18	35 19 38	75 28 09	.42	Good Signal

TABLE 2 (CONT'D)

CONTACT #	TRACK #	TIME Z	LORAN		SIGNAL STRENGTH GAMMA P-P	COMMENT
			N	W		
13	10	1940-02	35 19 42	75 27 82	.3	Good Signal
14	11	1947-54	35 19 21	75 27 68	.3	Fair to Poor
15	12	1955-44	35 19 16	75 27 58	.2	Mixed with Geomagnetics
16	13	2002-14	35 13 26	75 28 16	1.0	Good Strong Signal
17	14	2011-08	35 11 67	75 29 39	.75	Confirmation of Contact 7
18	14	2011-54	35 14 23	75 29 20	1.0	Confirmation of Contact 6

IRON BODY PROGRAM FOR AN ELLIPSOIDAL SHELL
 GROUP NO. 1 CASE NO. 1
 MONITOR NORTH HEADING

MATRIX PLANE AT DEPTH OF -50.0000 FEET.

X-AXIS, VERTICAL. Y-AXIS, HORIZONTAL.		TOTAL FIELD (GAMMA)		MAX = 10.13 MIN = .1823	
400.000	300.000	200.000	100.000		
-400.000	.1899	.2985	.4547	.6238	
-300.000	.2494	.4485	.8214	1.375	
-200.000	.3032	.6288	1.487	3.706	
-100.000	.3283	.7453	2.214	10.13	
100.000	.3159	.7023	2.005	8.448	
200.000	.2886	.5896	1.369	3.342	
300.000	.2382	.4248	.7719	1.284	
400.000	.1823	.2854	.4332	.5927	
-100.000	-200.000	-300.000	-400.000		
-400.000	.6238	.4547	.2985	.1899	
-300.000	1.375	.8214	.4485	.2494	
-200.000	3.706	1.487	.6288	.3032	
-100.000	10.13	2.214	.7453	.3283	
100.000	8.448	2.005	.7023	.3159	
200.000	3.342	1.369	.5896	.2886	
300.000	1.284	.7719	.4248	.2382	
400.000	.5927	.4332	.2854	.1823	

Schematic Representation of Search Mode

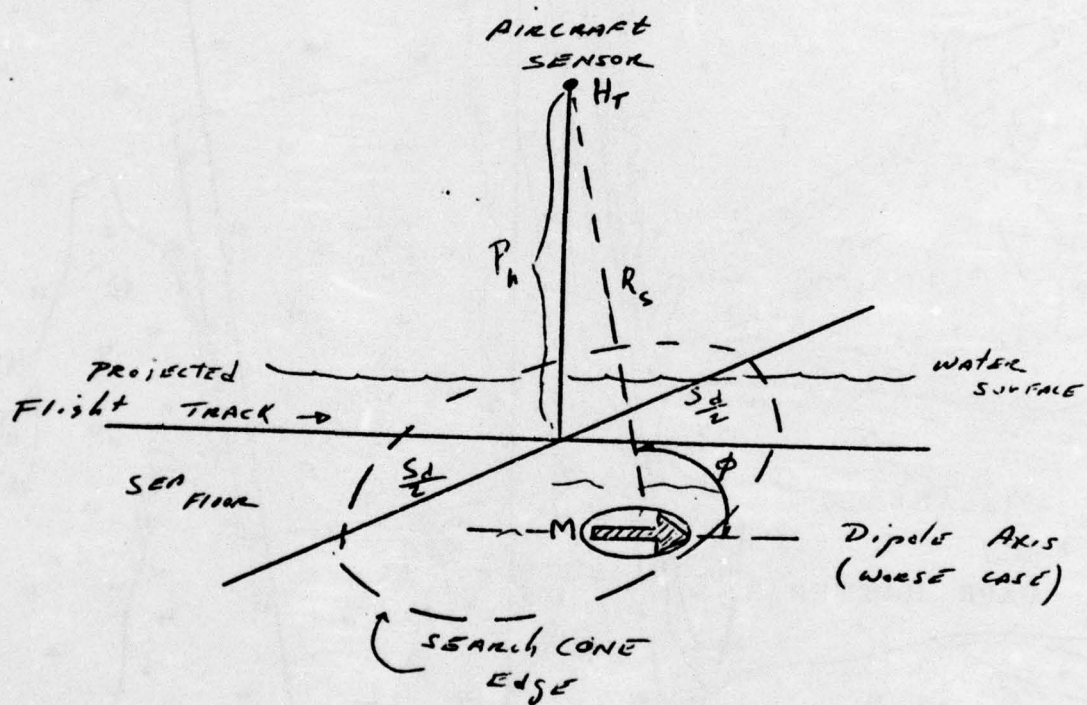
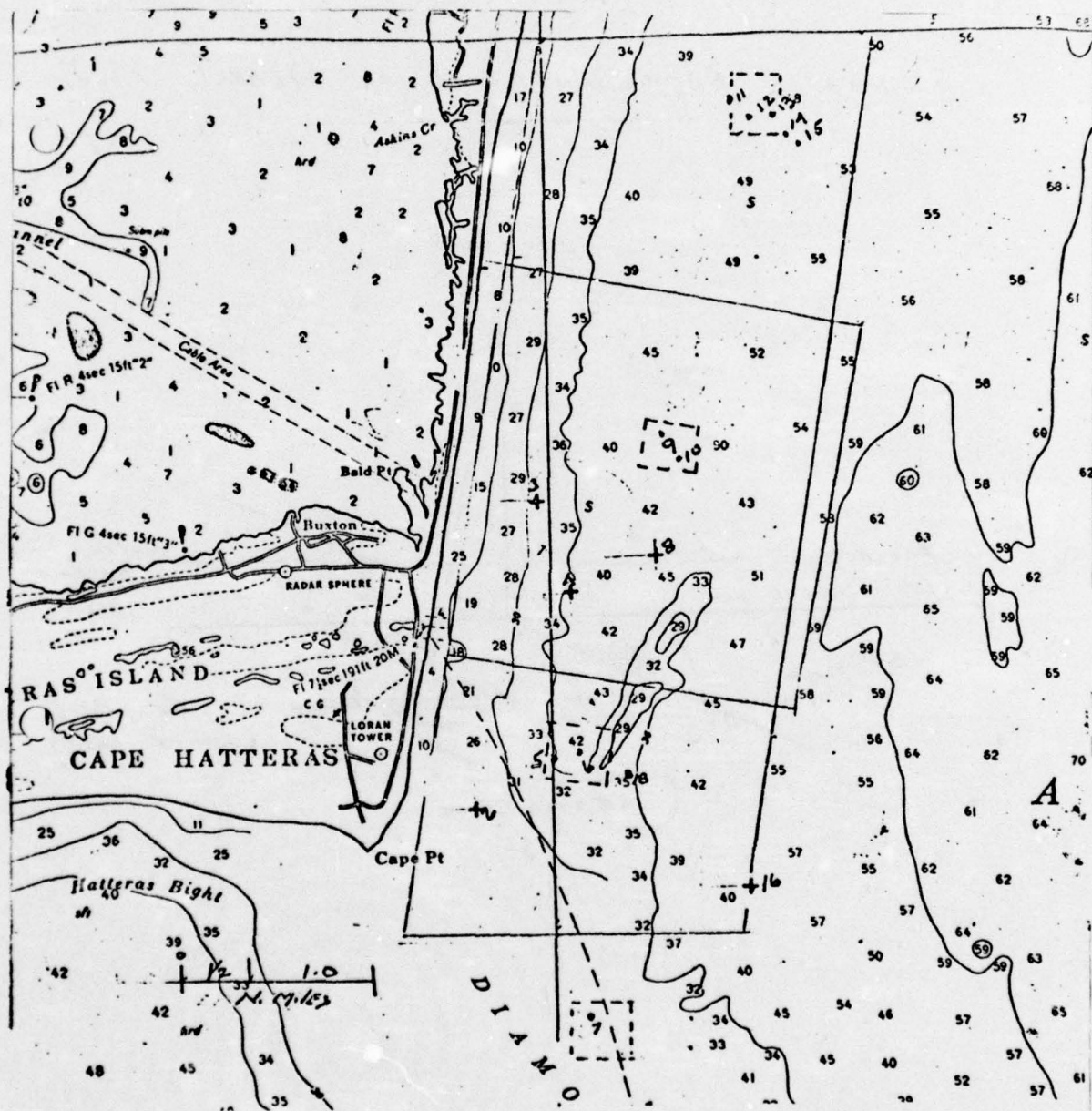


FIGURE 1



EDITOR'S NOTE

Roland Wommack, a 1959 graduate of the Naval Academy, organized an ambitious project around the Monitor and other famous shipwrecks. Going under the various titles of Squid, Inc. and of late Trident Foundation, his group is planning to provide technical assistance to already organized search efforts.

Borrowing heavily from past Navy associations and surplus Navy equipment, Mr. Wommack has been surprisingly successful in gathering equipment and interested people. He made contact with Jim Elwood who was aboard the Navy UOL test in 1950. Their Monitor search centered around this position and problems with weather and equipment scuttled many attempts to send divers down. Excerpts from their research design which explains their approach follows.

THE MONITOR PROJECT

In March 1862, the USS Monitor fought the Merrimac at Hampton Roads, Virginia. The victory of the Monitor in this engagement demonstrated the superiority of the Turret over the classic Broadside. This small ship represented a historic step in the technological advancement of naval warfare.

In spite of the ingenious design of the Monitor as a gun platform, she left something to be desired as a seagoing vessel. Nine months after her historic duel with the Merrimac, while proceeding south for blockade duty off the Carolinas, under tow by the Rhode Island, she was lost at sea in a storm off Cape Hatteras, the "graveyard of the Atlantic". Sixteen of her crew went down with the ship.

The romantic attraction of the sea and the fame of this little ship, has led numerous expeditions to Cape Hatteras to search for the wreck site. These have been noted for their lack of success. After preliminary investigation of official documents describing the loss of the Monitor, a contact was made with Robert Flemming, author of A Primer of Shipwreck Research, and a former research analyst for the Army Map Service and D.I.A., who now engages in private consultation work. With Mr. Flemming's help, an extensive inquiry was made into additional sources concerning the sinking of the Monitor.

1. Stories in contemporary newspapers such as the Washington Star, Harper's Weekly, Scientific American.
2. The report of Admiral Lee's inquiry investigating the loss including: statements by the officer commanding the Monitor the night she went down; the ship's log; and the log of the USS Rhode Island, the vessel towing her to the blockade station.
3. The writings of the ship's pay master.
4. Contemporary photographs and other materials about the ship.
5. Publications printed during this period such as Sailing Directions and The Coast Pilot, which were checked to see if there were any appreciable difference in tides, currents and winds from that time to this; there were none.
6. Nineteenth century charts and surveys to verify the position of navigational aids referred to in the ship's logs.

Using the information extracted from these sources, a track of the Monitor's movements was constructed. The track was submitted for verification to P.V.H. Weems, Captain, U.S.N. (Ret.), the holder of the National Geographic Society's 1968 Oliver La Gorce medal for "contributions to science and exploration through pioneering achievements in marine, air and space navigation." Captain Weems approved the reconstructed track.

Under the direction of A. A. Elwood, a high frequency sonar search has been conducted by 20 square miles of ocean bottom centered at our estimated position of the Monitor. A wreck, lying upright at 300 feet on a hard sand bottom, was found. It has the following characteristics conforming to

those of the Monitor:

1. Overall dimensions of approximately 160 feet by 40 feet.
2. A large structure midships.
3. A small structure forward.

The sonar presentation photograph of the wreck was taken from out 500 feet ahead and 300 feet above the sunken vessel and about 50 degrees to the port of the wreck, whose stern is in the sand bottom. The wreck's depth of over 250 feet has probably been the most important factor in hiding its position over the years. Until very recently, the search and diving technology required to locate and recover at that depth did not exist.

On the basis of our research and collective experience, we believe that the object described above is the wreck of the USS Monitor.

Copies of the enclosed Hatteras wreck chart, prepared by the State of North Carolina, and containing a listing, position and identification of the known wrecks in the area are available and have been studied. The Monitor is conspicuous by its absence.

In an initial operation, we have verified the site of the wreck utilizing both airborne magnetometer and sonar surveys. Subsequent operations will involve lowering borrowed U. S. Navy underwater television and motion picture equipment from the surface to obtain data necessary to conduct the first dives.

The diving phase will require a ship equipped for deep diving activities with appropriate winches and mooring tackle to put down a moor over the wreck; adequate lighting for night work; transit sonar; recording fathometer, navigation equipment; ship-to-shore communications; mixed gas diving and decompression facilities. Such a vessel and the required equipment are available. The crew manning the ship will include personnel familiar with the Hatteras area and at sea operations.

Contacts have been made with the various government agencies concerned. An established relationship between the Norfolk Naval Museum, The Monitor Project, and the Navy permits assistance from the Navy. We will own any recovered portions of the ship due to the abandonment of the ship by the United States in 1954.

A total commitment of three hundred thousand dollars is being sought.

RESOURCE REQUIREMENTS

Equipment	\$ 90,000
Salaries	41,000
Recording	100,000
Support Services/Supplies	69,000
	<u>\$300,000</u>

The equipment and services of the Optics Branch of the U.S. Naval Photographic Center are available at nominal cost. This is the organization that filmed the underwater sequences of the film Twenty Thousand Leagues Under the Sea. We will be required to provide the film and per diem for the divers. The exposed film will remain our property. A credit will be acknowledged in the film for their services. This will provide the project with complete underwater film coverage. Additionally underwater television equipment will be made available by the Naval Undersea Center to permit real time recording and display of the wreck.

Finally, several highly qualified Navy technical personnel have offered their services to aid in the project.

RETURN

The production of income from marine salvage operations depends upon the value of material saved and direct costs of operations. Value of material saved in the case of the Monitor should be high due to the intrinsic value of the artifacts. These will be among the rarest of any collection in the United States. The "Monitor Project" will own all recovered artifacts. Documentation supporting this position is enclosed in the appendix.

The depth of three hundred feet and the distance offshore at Cape Hatteras must be considered high risk to salvors. Costs of this venture have been minimized by the organization of professionals structured for salvage and recording.

This status will permit contracts to be negotiated with interested firms while protecting our interest. Future donations by the participants as individuals to the Norfolk Naval Museum will enable appreciated, deferred tax write-offs to be accumulated. Maintaining an "in-house" salvage capability to return at will to the site in form of a fully equipped salvage vessel is a basic requirement of the project.

The value of commercial exploitation via media exposure cannot be over emphasized. Similar films as Blue Water White Death, Ra Expeditions and Alaskan Safari are notable successes in commercial distribution. Considering the returns for these, similar commercial distribution could yield considerable returns.

In addition, television distribution yield in excess of \$300,000 can be expected.

European distribution rights can be expected to yield additional return. Preliminary contact with Europeans who are very familiar with this type of project show potential indications of interest. An additional source of funds is via the J. Walter Thompson agency who has a number of clients who have expressed interest in utilizing the project as an advertising or public relations vehicle. For example, Rolex will provide their Submariner Chronometer for the participants.

ORGANIZATION

The "Monitor Project" is envisioned as a limited partnership formed to conduct diving and salvage operations on the wreck site and to provide photographic records of the operations. The general partners have brought the project to its current position.

Limited partners will provide the remainder of the financial requirements. They will receive a share in the partnership at a rate of one percent for each six thousand dollars contributed for an aggregate maximum of fifty percent of the partnership interests. Limited partners will also have a "first out", receiving the return of their investment before any further distribution of profits. In addition, there will be an allocation of deductions attributable to the salvage operations (i.e., the initial \$300,000 of expenditures) to the limited partners, a considerable part of which will be deductible during the first year. If it is possible to conduct the operations planned for less than the projected three hundred thousand dollars, the funds not required will be returned to the limited partners as part payment of their "first out", with no reduction of their partnership interests.

The rights and obligations of the general and limited partners are set forth in the limited partnership agreement.

THE FILM

Suggested Title: Descent to the Graveyard: The Search for
----- the Monitor

There is powerful human drama behind the three year effort of Roland Wommack and his colleagues to convince the skeptics that he has found the exact spot where the Monitor lies on the ocean floor.

A motion picture which can capture the dedication and conviction of this man; the frustrations and delays; the gradual gathering of convincing evidence and untangling of legalities—and the final dramatic days leading up to the initial drive and verification of the sunken hull would make a film of enormous appeal to that secret spirit of adventure in all of us.

Whether it is Hillary conquering Mount Everest, Francis Chichester sailing solo around the globe, or any other single-minded struggle to achieve a human goal against the odds, this "Monitor Project" has those same elements of suspense and satisfaction.

We will shoot above and under the ocean's surface -- backward and forward in time -- making the viewer a surrogate participant in all the action.

The final film, with original music score and stunning underwater footage, will be a sure-fire bet for television specials or a feature length theatrical documentary.

Pursuing the Mystery of the Monitor

By Ken Ringle
Washington Post Staff Writer

Shortly after 9 p.m. on Saturday, Aug. 25, a dusty, eight-year-old Pontiac crammed with cables, antennae and dial-studded metal boxes swayed onto U.S. Rte. 301 near Suitland, Md., and shimmied southward, its single operative headlight slicing upward into the night sky.

Behind the wheel, his eyes alight with the thrill of the chase, crouched a 36 year-old former navy officer named Roland Raymond Wommack, off again on a quest as uncertain as his vehicle but as electric as the headlight's beam.

His destination was a poorly charted strip of sand about 400 miles to the southeast, 25 miles from land and 300 feet beneath the sea. There, he believes, lies the wreck of the USS Monitor, the Civil War ironclad that vanished with its cargo of history in a hurricane more than a century ago. The Monitor was one of two ironclads—the other was the Merrimac—built during the Civil War, the first the world had seen.

The Union Monitor and the Confederate Merrimac ushered in modern naval warfare when they fought a historic but inconclusive battle in Hampton

Roads, and historical and scholarly interest abounds in locating and raising the Monitor.

Somewhere among his past careers as Olympic fencer, sports car racer, naval officer, government marketing consultant, ocean surveyor and aerospace technologist and his present careers as professional diver, rescuer of dying classic sport cars and high-finance peddler of incinerators and surplus ships, Wommack was bitten by the bug for underwater search. While recovering from a fencing injury during his years at the Naval Academy, he happened on some old photographs of the Monitor in the Academy library and became enthralled with her mystery.

"She was a great little ship," he said. "She was built in 100 days in Brooklyn. Had the first modern ship design, the first screw propeller and the first rotating gun turret. The Monitor saved the Union blockade and altered forever the course of Naval warfare.

"The only thing was she didn't float very well."

For 15 years Wommack has dreamed of finding and raising her from her unknown watery tomb. Now the dream is at hand.

All he lacks is a sonar system, an underwater TV camera, a power system to fuel his borrowed navigational equipment, a boat to load it all on, a crew to man it and money to pay for it.

All he has on hand is the skeleton of a corporation (Squid, Inc.), his Naval Academy class ring and the doors it will open, the nerves of a burglar, the guile and silver tongue of some nautical flim-flam man, and the certainty he knows where the Monitor lies.

Wommack would have you believe he can carry the day with style alone, but he is schooled in ocean bottom survey, diving and recovery operations, and underwater search. Despite his cultivation of underdog odds, he has a tendency to find what he's after.

Searching in a south Florida creek for the Miami police department in 1969, it was he who located the anchor used by Jack (murph the Surf) Murphy to batter two California girls to death in a nationally-publicized murder case.

Around the world lies 135 treasure sites he hungers to explore: Spanish caches rotting away beneath the sea. But first and biggest in his mind's eye is the Monitor, though it carried no treasure. For Wommack the treasure will come from a movie made of its

finding and raising.

What will he do with the ironclad itself?

"List it for sale—as is, where is—in the Nieman Marcus catalog," says Wommack, and he grins at the onrushing night.

Like some waterlogged Flying Dutchman, the wreck of the Monitor has often been reported sighted, only to vanish again in the watery wilderness off Cape Hatteras, N.C.

A picknicking family reportedly spotted it from the beach in the 1880's. A Baltimore man reported seeing it through a glass-bottom bucket in 1948. A Marine diver named Robert Marx claimed to have located it in 1955 and placed a Coca-Cola bottle in its distinctive turret.

Nobody, however, has come up with a picture of the wreck, a piece of debris from it, or even a fixed site where others could confirm the ship's resting place.

But they keep trying.

Even as Wommack races southward, something called the USS Monitor Foundation, headed by Michael J. O'Leary of Portland, Oregon, is digging toward a large, sand-buried metal mass in 15 feet of water north of Hatteras.

Offshore, Dr. Harold Edgerton, inventor of the Edgerton underwater

camera, searches Capeside waters from the 117-foot marine research vessel Eastward, aided by Duke University oceanographer John G. Newton and a \$10,700 grant from the National Geographic Society.

For undersea searches like the Monitor quest there are certain requirements, most of them gadgets and electronic whiz boxes produced by space age technology.

There is one other prerequisite. Good weather.

Sunshine and calm winds to flatten the heaving seascape off Hatteras, where the confluence of the Gulf Stream and the Labrador Current keeps the waters in almost constant turmoil and leave the bottom murky with sand swirls.

Wommack says the worry isn't just visibility.

"I always get seasick as hell," he says.

The day before he left Washington, a high pressure area pulled up off Cape Hatteras and parked. Sunday morning its blue skies and sunshine find Wommack and Co. installed at a harbor-side motel in Norfolk. From there he will search for the equipment he needs in the largest U.S. naval installation in the world.

Over the next five days while he hunts, cajoles, eases and wheedles equipment from the Navy, the personnel of the search assemble. Some are borrowed, some volunteered, some gave money to come.

"There's one common denominator," Wommack remarks one night over a Planters Punch. "We're all just a little bit bananas."

The cast:

Wayne L. Werner, 28, of Waldorf, Md., navigator. A bear-shaped electronics technician from the Naval Oceanographic Office, Werner nurses the borrowed mountain of blinking lights and cables on the navigational equipment that will tell Wommack where he is. Self-educated, world-traveled and fluent in both mathematics and literature, Werner carries the bulk and demeanor of some novel-writing piano mover in Greenwich Village. In fact, he was born there, Buckminster Fuller is his cousin.

Stuart Sillery, 28, of Washington. Cinematographer. A mustachioed veteran of six years shooting political documentaries for Charles Guggenheim. Last year he and Wommack bought a surplus tanker with which to chase the Monitor. Two days later the engine had fallen apart.

Dick Rader, 32, of Washington. Treasurer. Rader has the sinewy look of a compulsive athlete and pads around in tank tops and Mark Spitz swim trunks.

He met Wommack at a fencing tournament while chasing his own dream of winning the Olympic pentathlon competition. The only member of exhibition currently unemployed, he also is the only one to provide money. He came up with \$1,000 for the monitor project.

John Singer, 26, of New York. Cameraman. A working artist doing his time in the Navy as a combat cameraman. He's one-half Russian and had worked his way through all of Dostoyevsky by the time he was 10 and now is into Puskin.

Jim Riley, 60, of Norfolk, an underwater acoustical engineer rented from the Navy with the camera system he developed. A spare, sunburned man with a gray Van Dyke beard he talks in terms of "angstroms", "lines of resolution", "shrinkable tubing" and thallium iodide lights. He has a blue fly tattooed on each shoulder.

Nathan Roundy, 26, of Seattle, Wash. A bookish lumberjack of a man, 6-feet-5, who represents the Wesmar sonar manufacturing company. He appears in Norfolk on Wednesday after Wommack has spent four days looking for a sonar and finally arranged to rent one. Roundy offers use of the Wesmar unit free.

There will be others, and as they assemble Wommack scrambles for equipment, always

expecting to be waterborne within hours. On Sunday he has only the navigation equipment which he and Werner brought down in the sagging Pontiac. Monday he has no sonar but a clue on a TV camera and a possible boat. Tuesday the boat becomes unavailable, the movie equipment becomes available and the TV camera is definite. Still no sonar.

Tuesday night Wommack flies off to New York for a meeting about a project to cut up surplus Navy ships, load them on an old aircraft carrier, and float them to a scrap dealer in Taiwan.

When he returns the following night he suddenly has offers on two sonars, four TV cameras and the news that the weather will hold at least through Saturday. The boat is locked in.

"It all comes together at once," says an ebullient Wommack. "We'll be on the water Friday morning."

The expedition which Werner has led through a daily regimen of chocolate milk shakes and club sandwiches, marches off for a celebration dinner of broiled dolphin and Bull's Blood wine.

Wommack has won the Navy over part by accident and part by design.

"Apparently about four or five months ago," he says, "there was a conversation in

the very upper echelons of the Navy about what the Navy's going to do for the (nation's 1976) bicentennial. And somebody said the Monitor and a couple of weeks after that I walk in with the Monitor project.

"I told them I'm trying to pick up and preserve a significant part of the Navy's history. And that's true. I'll give the Monitor to the Norfolk Naval Museum.

"I don't want any money: just a little technical assistance.

"I say give me a training exercise in which 10 men and a \$10 million airplane run a magnetometer survey on my wreck site."

Tuesday the Navy gave him the survey. It conformed that at the position he gave them, an uncharted wreck lies some 270 feet beneath the surface.

From Adm. Isaac Kidd, Navy chief of Materiel, he has a promise of a cameraman and a TV camera, provided he can find one not currently occupied otherwise with Navy business.

But Thursday morning the telephone rings in Norfolk and informs Wommack that the TV camera is, once again, unavailable. The ranking officer in charge of the camera left early for the Labor Day weekend.

His replacement knows nothing about Wommack or Kidd's order. He's checking and it will be some time.

No camera. The TV camera is crucial. Other divers have reportedly found the Monitor before, but none has brought back TV film of it.

The Navy has been urging him to use the camera alone and forget the dive until he can have a decompression chamber on the site. Using a camera is much safer; three hundred feet is a long way down and any diver trying it without a chamber nearby stands a good chance of killing himself. The expedition has no chamber.

"The hell with it," says Wommack, staring steadily at the phone. "Call Stenchfield. It's like a mill pond out there. We've got to go now."

Stenchfield is the diver.

The Wommack Monitor expedition, which has been variously scheduled to depart during the past week from Rehobeth Beach, Md., Norfolk, Virginia Beach and Hatteras, N.C., finally finds a boat and leaves from Morehead City, N.C. The boat is a sleek, 60-foot sport fisherman named Tom Cat.

When skipper Gordon Cole fires up the engines there's a reassuring roar, and at 4:45 p.m. the Tom Cat noses out through the channel, gulls swirling above her stern in the sunlight and her wake

rolling like whipped cream on a weaveless ocean of cobalt blue.

The day, like the week that preceded it, has been filled with delays. A TV camera was located at the last moment in Norfolk and liberated from the confines of the Naval Engineering Center.

Then a frame has to be welded to carry it underwater and a cable spliced to carry it to the bottom. It is done and tested. It works.

On the six-hour ride to the wreck site, the major concern is electric power—power to fuel the two winking navigational boxes before which Werner now squints.

In the cockpit astern, an auxiliary gasoline generator—a backup system rented by Wommack in Morehead City—howls steadily while Wommack himself tears apart the diesel generator found in the Tom Cats' bowels. He discovers it is sparked by the wrong-sized plug and cannot be repaired. The rented generator will have to carry the load.

Werner's equipment consists of two independent systems: a Loran C receiver, which determines the vessel's position within interlocking shore-based radio signals, and a SatNav receiver and

computer that charts a position using signals from five U.S. navigational satellites.

They stand, winking numbers at each other, in a main cabin cluttered with snaking cables, electric cords, suitcases, electric junction boxes and a sagging beige sofa. The boxes can place the vessel within a few hundred feet of its actual position.

As daylight fades the Tom Cat pauses beside a buoy about 10 miles out so Werner can compare his machine's readings with the buoy's known location and correct any error. The SatNav is inaccurate, but the Loran is on target and the Tom Cat rumbles on toward the night and the limitless sea.

According to Roland Wommack, there are three kinds of treasure hunters.

"There are the technologists like Edgerton who get all the latest scientific gear and start cruising around. They figure if there's anything out there they'll find it.

"Then there are the go-go guys who hear a rumor and run out and start digging holes in the sand.

"Finally there are the historians . . . who may work on a site for years and never see it. They research the written data on a wreck and place it in order. They compare and evaluate the contemporary reports. They study tide tables and ocean

charts and wind data and arrive at a position where the wreck is. All this before they set foot on deck. I cast my lot with them."

Nine months after the Merrimac battle, the Monitor was being towed to blockade duty by the paddlewheel battleship Rhode Island when the hurricane struck. The Rhode Island had to cut the Monitor loose but sent a lifeboat to rescue her 63-man crew. After two trips, the lifeboat returned to find the Monitor had disappeared, with four officers and 12 seamen still aboard, 25 miles south of Cape Hatteras. The last man off reported knee deep water in the engine room.

Later claimed sightings put her north of the cape a mile or so from shore. To Wommack that did not jibe.

"And later, when I started steaming minesweepers up and down off the cape as a Navy officer, I knew it was crazy.

"To get where Marx and the others say she was, the Monitor would have had to drift some 25 miles and cross Diamond Shoals in the middle of a hurricane.

"No way! She was a heavy little craft and sinking fast. No way she could have gone that distance."

He started looking at charts and log books and contemporary writings about the vessel, plotted the ship's last known position and became convinced that that spot must be about where she went down.

Three years ago he told his theory to Albert A. Elwood, an oceanographer friend from Riviera Beach, Fla.

"I know that's where it is," Elwood said. "I've got a picture of the wreck."

Actually, what he had was a sonar profile.

While in the Navy in 1949, Elwood had been aboard a ship testing an advanced new sonar system called the UOL or under water object locator.

Around the Monitor's last reported position, the UOL's sonar profile of the bottom had shown a vessel the same size and shape as the Monitor.

Its stern was sunk in the sand and it was under nearly 300 feet of water—far too deep for the salvage techniques of the day.

Elwood wrote up his report and sent it to the Navy, keeping a copy for himself. He also kept a copy of the UOL sonar's picture of the Monitor.

But some years later fire destroyed the building in which records of the experiment were kept. Only Elwood

and a handful of other men even knew of its existence.

Elwood's confirmation was what Wommack had been looking for. The two joined up as partners, and through Elwood had to remain in Florida during this expedition, it is to his remembered position of the wreck he found that the Tom Cat now races.

Four others joined the expedition in Morehead City.

Gordon Cole, 46, of Swansburg, N.C., the soft-spoken skipper of the Tom Cat. Existing on cola and sandwiches and no sleep, he pilots the boat through the night, his compass lit only by a hanging flashlight due to the drain on the boat's electrical system from Werner's navigational aids.

Phillip E. Johnson, 43, of Alexandria, A Navy captain who helped build and drive an undersea vehicle called "Deep Jeep" during the search for America's lost hydrogen bomb off Palomars, Spain in 1966.

A Pentagon volunteer on the Monitor project, Johnson claps around the Tom Cat in a pair of pink Rubber sandals, splicing cables and fixing things, an everpresent cigar in his mouth.

Dan McCarthy, 23, of Silver Spring, assistant diver. His eyes shaded by raparound metal-rim sunglasses, he describes himself as "a writer by preference and a house painter by necessity" and sits on the foredeck smoking cigars and staring steadily out to sea.

Stuart Stenchfield, 37, of Wheaton, Md., the diver. A former construction superintendent for 15 years and turned professional 4½ years ago. In addition to making contract dives, he runs a diving shop in Wheaton.

The plan, as outlined by Wommack, is to reach the position where Elwood found the Monitor before, relocate the wreck with the sonar and tow the TV camera back and forth over it getting film and TV tape that will identify the wreck.

Then the Tom Cat will attempt to drag an anchor into the wreck and Stenchfield will descend the line.

"He should be able to get into the turret through the hatch on top and bring up something," Wommack said, "a ramrod for one of the guns or something."

But he will have only a few minutes on the bottom.

At 300 feet a diver's body is under several tons of pressure that force normally inert gases into his blood stream, particularly nitrogen, clouding

the senses with nitrogen narcosis, the rapture of the deep.

"It affects different people in different ways at different depths," explains Stenchfield. "It starts to hit me at about 80 feet. It's like being stoned. All your responses are slowed down. You have to stare at your watch a long time to understand what it's telling you."

Stenchfield has made "maybe a dozen" dives as deep as 300 feet and doesn't talk much about them. At that depth, he says, "it's scary." It is cold and there is no light. The diver works by touch, he says. He will attach a line to the anchor line to guide himself back.

He will have to ascend in stages, stopping to breathe out the gases in his blood and avoid "the bends." The Tom Cat carries no anti-shark cages Stenchfield could slip in to when he stops at various levels during his hour-long ascent, and sharks have been sighted in the area.

At 100 feet Dan McCarthy will be waiting with an extra tank of air.

The diver's ascent is a delicately scheduled process. The amount of time he spends on the bottom

determines how fast he can come up.

Stenchfield is vague about the schedule and says he left his tables at home. In addition, he forgot to pick up tanks of pure oxygen and helium that would minimize the nitrogen narcosis problem on the bottom. He'll go down on regular air.

"Every diver is out to prove he has more guts than everybody else," Wommack said one night at a pre-expedition meeting at Clyde's Bar in Georgetown. "Stenchfield wants to be the first man to land on the deck of the Monitor."

He'll make the dive for \$300. "It's the only sport I ever enjoyed," Stenchfield says.

"From this ship? A dive like that? With no spare diver (at the bottom with him)? He's got to be crazier than me and I've been married five times," says Jim Riley a veteran diver himself, as he cradles his TV camera. "One mistake and it's like hollering bingo. That's the end of the game."

At 1 a.m. the engines of the boat throttle down. Johnson, Werner and Wommack huddle in a corner of the darkened, cable-strewn cabin next to a 5-foot square map board and an onionskin chart lined with parabolic curves.

The Loran navigation system says the Tom Cat is in the area,

somewhere over Elwood's wreck.

Nate Roundy begins probing with his sonar, an eggplant shaped structure on the end of a six-foot pipe, bolted vertically to the Tom Cat's side. The needle on its circular scope in the cabin sweeps silently and the Tom Cat creeps slowly northward at two knots, searching.

Stenchfield paces nervously in the cabin and walks out into the cockpit to look over the stern.

The lights of the boat don't reflect off the water, they shine into its clear depths, giving the illusion that the sea is lit from below.

Stenchfield thrusts his hand overboard into the clear blue. "Look at that," he says. "Visibility must be 150 feet. Hurry up and find the thing Wommack. I want to go diving."

As he slumps in a deck chair and lights a cigarette, his chest is heaving.

By 4 a.m. a weary Werner has started reading the Loran numbers backwards and the rest of the crew is bleary from lack of sleep. Wommack suspends the search until dawn.

First light finds the vessel silent on a mist-shrouded,

windless sea of topaz, while above it cotton-wisp clouds fade from pink to peach in the day's new sun.

The earliest wrecks of Cape Hatteras date from the 17th Century, Spanish and British ships who met their death on the shoals. Ships have been sinking there ever since, victims of the violence of nature and of man.

Nobody knows how many there are in all. Some charts count as many as 700.

The Tom Cat prowls for three hours in the graveyard, searching with a fitful sonar for one of the dead.

It is clear and hot and the generator howls steadily in the humid air and the beer supply dwindles. There is no electricity to spare for the coffee pot and Budweiser becomes the breakfast of treasure hunters.

The SatNav has been cashiered and there are worries about errors with the Loran.

Wommack, who had talked of "a couple of hours work, barring accidents," is showing rare signs of discouragement.

Then from the pilot house above comes a shout:

"We've got a wreck!"

While Roundy's hesitant sonar has faded in and out, the Tom Cat's fathometer has been at work. The instrument in the

pilot's cabin uses sound waves to sketch on graph paper a scratchy profile of the ocean bottom and mark its depth. On its scribbled profile of the bottom is a sharp high peak at 280 feet. A wreck.

Wommack and Werner huddle at the Loran and suddenly Singer and Sillery are everywhere filming.

"Chances look very good," says Wommack. "It plots out right where we ought to be."

But Werner thinks the boat is still too far north and the water too shallow. Wommack knows there are three wrecks in the area. The Monitor is the furthest south, some two miles from the others.

Wommack decides to bet on dead reckoning. The Tom Cat wheels and motors southward across the bright water.

Two miles south of the first wreck he drops a neon orange can buoy weighted by a cinderblock into the unrippled cobalt sea. That will mark the spot where the Monitor should be.

The Tom Cat circles around it and begins searching slowly northward.

Within a mile Roundy finds a wreck with the sonar. Then he loses it. The Monitor? It's within the Loran fix but at 260 feet not 300. Still too shallow?

Cole halts the Tom Cat for a decision.

Suddenly the snarl of the generator sputters and dies. It has run out of gas, and so, apparently, has Roundy's sonar. Werner curses. The death of the generator has killed the Loran and it will take as much as 30 minutes to warm it up again and recorrect the position.

Roundy is not hopeful about the sonar, and Wommack is uncertain about the depth. The sonar can search ahead, and to the side. To locate by fathometer, the ship must be directly over the wreck.

"We could stay out here all day and run back and forth over it with the fathometer and maybe never find it. We're dead without the sonar," he says.

Was it the Monitor? Wommack wonders and unwillingly orders Cole to head for home. The boat is chartered by the hour and he's all at once aware that the Monitor project has run out of funds.

Suddenly, it's a long way home. Plenty of time to wonder how Edgerton and the scientists aboard the Eastward did in their search.

Just before the Tom Cat left port, somebody told Wommack they'd found something.

When he won his gold medals with the epee in the Pan American games in 1960, Wommack always lost the first few bouts before he started winning.

"I almost have to do that," he says with a smile. "Then it gets to be fun."

Two days after the boat's return he's on the phone in Washington.

"We were on it, I tell you. We were right there. The charts off. The bottom's been better charted since 1949, that's all. The correct depth is 260 feet. That was the Monitor."

From the Edgerton party, the news is veiled.

After a two-week search that concluded as Wommack's began, Duke University announced "scientists said there is only a possibility they may have found the historic warship."

Wommack wonders, and shrugs his fears aside.

"It will take them three months to examine their films. By that time we'll be back with a piece of the wreck."

Wommack says he'll be out hunting again the first week of October. And this time he'll have on board one of Edgerton's students—a veteran of the search for the Loch Ness monster.

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<p>The work is a multi-disciplined research project conducted at the U.S. Naval Academy and it was initiated by Midshipmen to study the history of the Civil War "Ironclad" USS Monitor.</p> <p>The project was divided into three phases:</p> <p>1/ the first phase is the documentation of the history of the Ironclad and its inventor John Ericsson;</p> <p>2/ phase two was the construction of two scale models: one is a tow tank model for testing; the other one is a cutaway model showing particulars of construction and interior details;</p> <p>3/ the phase three was the development of search techniques and procedures to be used in searching for the lost hulk of the Monitor. Technical assistance was given by the Naval Ship Research and Development Center and by the research vessel Alcoa Seaprobe.</p> <p>Documents, detailed descriptions with illustrations have been given in this 3 volumes report.</p>			

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Abstract (cont)

This volume documents the loss
of the USS MONITOR, and outlines
the project which was to locate her
over a century later. It also
lists an extensive Bibliography
concerning the IRONCLADS and John
Ericsson.

